DCCUMENT RESUME

ED 049 505 CG 006 318

TITLE	Alcohol and Alcoholism.
INSTITUTION	National Inst. of Mental Health (DHEW), Chevy Chase, Md. National Clearinghouse for Mental Health Information.
PUB DATE	68
NOTE	84p.
AVAILABLE FRCM	Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. ($.50 per copy)
EDRS PRICE	EDRS Price MF-$0.65 HC Not Available from EDRS.
DESCRIPTORS	*Alcohol Education, *Alcoholism, Community Health, Education, Health, Health Education, *Health Programs, *Prevention, *Program Descriptions, Program Guides, Program Planning, Socially Deviant Behavior

ABSTRACT

This concise survey presents some of the highlights of modern research on drinking and alcoholism, as based on technical articles published in the scientific literature and the views expressed by leading authorities in the field. Contents include discussions about: (1) the nature and scope of the problem; (2) the chemical composition of alcoholic beverages and their effects on the body; (3) the causes, diagnoses, treatment and prevention of alcoholism; (4) current activities in the fields of services and research; and (5) the national program. An extensive bibliography is included. (TI)

ED049505

ATIONAL CLEARINGHOUSE FOR MENTAL HEALTH INFORMATION

Alcohol and Alcoholism

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Service

1

PRODUCED BY
PUBLIC INFORMATION BRANCH
NATIONAL INSTITUTE OF MENTAL HEALTH

ED049505

Alcohol and Alcoholism

NATIONAL INSTITUTE OF MENTAL HEALTH

National Center for Prevention and Control of Alcoholism
Chevy Chase, Maryland 20203

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

CG 006 318

PUBLIC HEALTH SERVICE PUBLICATION NO. 1640

Washington, D.C. 20402 - Price 50 cents
For sale by the Superintendent of Documents, U. S. Government Printing Office

FOREWORD

No other national health problem has been so seriously neglected as alcoholism. Many doctors decline to accept alcoholics as patients. Most hospitals refuse to admit alcoholics. Available methods of treatment have not been widely applied. Research on alcoholism and excessive drinking has received virtually no significant support.

The atmosphere of moral disapproval surrounding the entire subject, and the deplorable custom of treating alcoholics as sinners or criminals have obscured the nature of the problem.

But now we recognize that alcoholism is an illness—no more moral or immoral than tuberculosis or pneumonia or schizophrenia—and that our ways of dealing with that illness have been shockingly inadequate.

At the direction of President Johnson, the Department of Health, Education, and Welfare is now developing a comprehensive program aimed at control and prevention of alcoholism and at providing sound, objective information about the problem.

This report surveys the present state of our knowledge of alcoholism, based on the best scientific information available. It represents a major step toward understanding and eventual control.

JOHN W. GARDNER
Secretary of Health, Education, and Welfare

ACKNOWLEDGMENTS

The National Institute of Mental Health extends its appreciation to the following for their guidance and assistance in the preparation of this monograph:

Dr. Walter Alvarez, Chicago; Dr. Selden Bacon, Rutgers University; Dr. Marvin Block, Albany Medical College; Dr. Morris E. Chafetz, Massachusetts General Hospital; Dr. Charles Davidson, Harvard University; Dr. William Dock, State University of New York; Dr. Olof A. Forsander, Finnish State Alcohol Monopoly, Helsinki; Dr. Ruth Fox, National Council on Alcoholism; Dr. Vernelle Fox, Georgian Clinic, Atlanta; Dr. Leonard Goldberg, Karolinska Institute, Stockholm; Dr. Leon Greenberg, Rutgers University; Dr. Jack Gordon, Mount Zion Hospital, San Francisco; Dr. Joseph Hirsh, Albert Einstein College of Medicine; Dr. Ebbe Curtis Hoff, Medical College of Virginia; Mark Keller, Rutgers University; Dr. John C. Krantz, Jr., University of Maryland; Dr. Marcus Krupp, Palo Alto Medical Research Foundation; Dr. Chauncey D. Leake, University of California; Dr. Giorgio Lolli, International Center for Psychodietetics, New York; Dr. George L. Maddox, Jr., Duke University; Dr. John R. Philp, Kansas City Health Department; Lewis Presnall, National Council on Alcoholism; Dr. Milton Silverman, Department of Health, Education, and Welfare; Dr. Robert Straus, University of Kentucky; and Wayne Wille, National Safety Council.

PREFACE

Today Americans live in a culture in which the use of alcoholic beverages is widely, though not universally, accepted. Yet, at the same time, the misuse of alcohol represents a public health problem of major significance. The effects of excessive drinking on one individual, tragic as they may be, indicate only one aspect of the problem; they are compounded by the effects of his behavior on his family, his friends, his fellow-workers and his neighbors. In the aggregate, our entire society is concerned.

It is evident that we have been unable to find any simple remedy for this problem through legal or moral pressures. It is equally evident that the remedy does not lie simply in treating those who have already become addicted to alcohol, since the provision of adequate manpower and facilities to treat all alcoholics with presently known methods on a one-to-one basis would in itself utilize the full time of every physician and fill every hospital bed in the Nation.

Clearly, we cannot ignore those who are already victims of alcoholism. Much effort is required to utilize fully for them the best therapeutic methods now available, and to develop and test improved methods for the future. But it is obvious that the eventual control of alcoholism must depend primarily on the prevention of alcoholism.

Before alcoholism can be prevented, it must be understood. We urgently require research to clarify our understanding of the complex causative factors. We require research to provide an understanding of the physical, psychological and social effects of alcohol. We require research to develop and test techniques—biochemical, psychological, educational, sociological and perhaps others—which might have value in prevention. For full effectiveness, these must be broadly based investigations: they must concern drinking rather than only alcoholism, alcoholic beverages rather than only alcohol, and actual life situations rather than only laboratory experiments.

Research in these various fields is relatively new. More needs to be done in universities, research centers, hospitals, community health centers, industrial organizations, and many governmental agencies. In the Federal Government, the Public Health Service's National Institute of Mental Health has had major responsibility for the support of research on alcohol and alcoholism, demonstration programs, training and control activities. Now, by direction of President Johnson, a National Center for the Prevention and Control of Alcoholism has been established at the Institute, through which many of these activities can be vigorously and creatively directed and coordinated.

In addition, it is equally important that the public be informed. The results of research would be largely wasted unless they could be communi-

cated to the adults and the young people in our society whose welfare may be intimately involved. It is important for them to recognize, for example, that much of what has been popularly believed in this field is not supported by modern knowledge. It is important for them to realize that there are treatment methods now available which can be effective. It is important for them to know that how much one drinks may be less important than when he drinks, how he drinks, and why he drinks.

This report marks one of the first steps in this new, broad program of information. Rather than a complete and completely documented treatise, it is a relatively brief survey. It presents some of the highlights of modern research on drinking and alcoholism, as based on technical articles published in the scientific literature and the views expressed by leading authorities in the field.

From this report, it will be obvious that much knowledge has been acquired, but that more is needed. There are evident gaps in our knowledge, and accordingly there is still controversy and confusion which can be remedied only by further investigation.

It will also be obvious that successful programs for the treatment, control and prevention of alcoholism will require unprecedented public understanding, public support and public participation.

STANLEY F. YOLLES, M.D.
Director
National Institute of Mental Health

JACK H. MENDELSON, M.D.
Chief, National Center for Prevention
and Control of Alcoholism
National Institute of Mental Health

8

TABLE OF CONTENTS

FOREWORD iii
ACKNOWLEDGMENTS v
PREFACE vii

I. HISTORY 1
The New Look at Drinking 1
At the Beginning 2
Why People Drink 2
Excessive Drinking 2

II. EXCESSIVE DRINKING: NATURE OF THE PROBLEM 5
The "Drinking Problem" 5
The Problem Drinkers 5
Alcoholics: Definition 6
Disease or Self-Indulgence? 6
The Habitat of Alcoholics: The Skid Row Myth 7
Consumption by Alcoholics: The "Safe-Level" Myth 8

III. EXCESSIVE DRINKING: SCOPE OF THE PROBLEM 9
The Number of Drinkers 9
The Number of Problem Drinkers 10
The Number of Alcoholics 10
Sex Differences 10
Regional Alcoholism Rates 10
Risk of Alcoholism 11
Trends in Alcoholism Rates 11
Alcoholism Deaths 11
Traffic Accidents 12
The Cost to Industry 13
Alcohol and Crime 13
Alcohol and Brain Damage 14
Alcohol and Family Problems 14
Teenage Drinking 14

IV. THE CHEMICAL COMPOSITION OF ALCOHOLIC BEVERAGES 17
The "Congeners" 17
The Fusel Oils 18
The Value of Chemical Data 18

285-337 O - 68 - 2

V. EFFECTS OF ALCOHOLIC BEVERAGES ON THE BODY 19
Absorption 19
Metabolism 20
Excretion 20
Stimulant or Depressant? 20
Effects on the Brain 21
Effects on Skilled Performance 22
Effects on the Liver 22
Effects on Other Organs 22
Deficiency Diseases 22
Resistance to Infection 23
Gout 23
The Hangover 23
Effects on Longevity 23

VI. CAUSES OF ALCOHOLISM 24
Physiological Factors 24
Psychological Factors 25
Sociological Factors 25

VII. DIAGNOSIS OF ALCOHOLISM 29
The Warning Signs 29
The Diagnostic Traps 30

VIII. TREATMENT OF ALCOHOLISM 31
Preliminary Treatment 31
Hospital Admission 32
Drug Therapy 33
Psychotherapy 33
The Therapist 34
The Clergy, AA, Physicians, ... 34–35
Other Specialists, Special Family Aid 36
Individual vs. Group Therapy 36
Chances of Recovery 37
The Role of Industry 38
The Role of Health Insurance 38
The Role of Local Agencies 39
The Role of State and Federal Agencies 39

IX. PREVENTION OF ALCOHOLISM 41
Legal Approaches: National 41
Legal Approaches: Regional 41
Legal Approaches: The Young Drinkers 42
Religious Approaches 42
Education: Against Alcohol 43
Education: For Safe Drinking 44

X. CURRENT ACTIVITIES: SURVEYS AND SERVICES 46
Survey of the Problem 46
Treatment and Rehabilitation Facilities 47
Community Mental Health Centers 48
Technical Training 48
Community Education and Organization 49

XI. CURRENT ACTIVITIES: LABORATORY AND CLINICAL RESEARCH 51
Effects of Alcohol 51
Physiological Factors in Alcoholism 52
Alcoholism in Experimental Animals 53
Research on Therapeutic Methods 54

XII. FUTURE NEEDS 57
Application of Present Knowledge 57
Search for New Knowledge 58

XIII. THE NATIONAL PROGRAM 60
The Presidential Directive 60
The Health, Education, and Welfare Program 60
Intragovernmental Coordination 61
National Action Policy 62
Research 62
Education 63
Delivery of Services 63

BIBLIOGRAPHY 65
SUGGESTED SUPPLEMENTARY READING 73

Alcohol and Alcoholism

I. HISTORY

The use and misuse of alcoholic beverages is a major subject of controversy in America. It has nearly always been so.

Efforts to control drinking have ranged from sermons from the pulpit and advice from physicians to judgments by the courts. The very political climate of the Nation has been shaped by attitudes about drinking—attitudes as disparate as those which brought about the Whiskey Rebellion of 1794 and the Volstead Act of 1919.

America has tried nationwide prohibition by Federal law and rejected it. Today, it is generally accepted that those adults who wish to drink have a right to do so, limited by local customs defined by either written or unwritten laws. But legal rights, written or unwritten, are not the only factors involved. Social rights and social pressures are also concerned, and these may vary widely in different groups and different regions.

Under these circumstances, there is no one national attitude toward moderate or social drinking that is acceptable to everyone. Perhaps there will never be such agreement. But there is developing a common attitude concerning the excessive drinker, the problem drinker, and the alcoholic. This is based in part on the growing awareness that the problem of excessive drinking in this country is of serious proportions. It is based also on the growing recognition that alcoholism and excessive drinking represent not simply moral issues but medical problems with complicated and interrelated chemical, physiological, psychological, and sociological aspects. As such serious and complex problems, they require careful examination.

The New Look at Drinking

This new look at drinking is not a renewal of hostilities between "wets" and "drys." Instead, there seems to be an appreciation among many thoughtful people—including scientists, physicians, educators, jurists and religious leaders—that solution of drinking-related problems requires an understanding of drinking in its many complex facets. It is essential to consider not pure alcohol itself (which is almost unknown outside the laboratory), but the chemistry and the physiological effects of the alcoholic beverages consumed in real life by real people, as well as the psychological and sociological implications to a society in which abstinence, moderate drinking, excessive drinking and alcoholism all occur as normal or abnormal behavioral patterns. It is likewise essential to consider the nature of the problems and their scope, to assess their true impact on American society, and to arrive through study and research at new knowledge that can

help prevent and control excessive drinking and simultaneously improve the treatment and rehabilitation of the alcoholic.

At the Beginning

Even though widespread public awareness of drinking problems is new, the existence of alcohol is exceedingly old.

As with such natural phenomena as fire and water, the discovery of alcoholic beverages cannot be assigned a date or a patent number, nor credited to any man or place. Only a few basic ingredients—sugar, water, yeast and a mild degree of warmth—are required for alcohol production. Where these occur together, it is virtually impossible for alcohol *not* to be produced. According to paleontologists, all four were present on earth in Paleozoic times, at least 200 million years ago.

It seems obvious, therefore, that alcohol preceded man and that he began to use it long before the beginnings of written history. Since the earliest civilizations, alcoholic beverages have been viewed as nutritious foods, valuable medicines and sacred liquids for religious ceremonies.

Why People Drink

It is generally accepted today that alcohol, by strict definition, is a food, since it is a source of calories.[140] Like some other nutrients, it is not a perfect food; it contains no vitamins and is harmful when used to excess.

Alcoholic beverages have a long record of medical use and were at one time among the most widely prescribed drugs. (Here, it should be emphasized, a drug is defined as any substance—such as aspirin, cortisone, penicillin or thyroid extract—used for the prevention or treatment of disease.) It is still accepted that alcohol may serve as a useful, although not a curative, medical agent. While some of the health values once attributed to beer, wine and distilled spirits have been disproved, others have been confirmed by modern scientific study. For example, certain alcoholic beverages are now being used by physicians in the diet of diabetic patients, since alcohol, unlike sugar, does not require insulin for metabolism. They are also used by some physicians as aids in the treatment of arthritis, digestive diseases, high blood pressure and coronary disease, and as tranquilizers or sedatives for convalescent and geriatric patients.[70]

In one form or another, alcohol was probably the first tranquilizer known to human beings and remains today the most widely used.[33 51]

The drinking of alcoholic beverages has long been established as a part of many religious rites, and continues in that role.

In the majority of instances, however, drinking stems from the desire for an antidote to unpleasant reality, the need for an ego booster, or as an aid to sociability and simple pleasure. Quite apart from any physiological effects, the custom of drinking has often been felt to be rewarding because of the social interrelationships, the status, and the behaviors and attitudes that accompany it.

Excessive Drinking

Throughout the history of alcoholic beverages, drunkenness has been considered a problem (although there have been times when it was accepted and even highly approved).

One of the oldest temperance tracts on record was written in Egypt about 3,000 years ago, under the title of *Wisdom of Ani:*

"Take not upon thyself to drink a jug of beer," it advocated. "Thou speakest, and an unintelligible utterance issueth from thy mouth. If thou fallest down and thy limbs break, there is none to hold out a hand to thee. Thy companions in drink stand up and say: 'Away with this sot.' And thou art like a little child." [117]

Similar sentiments in Greek, Roman, Indian, Japanese and Chinese writings, and in both the Old and New Testaments, denounce excessive drinking.

Alcoholic beverages were probably known in the New World long before Columbus. They were certainly brought to America in 1607 with the settling of the Virginia Colony. Twelve years later their excessive use was such that a law decreed that any person found drunk for the first time was to be reproved privately by the minister; the second time publicly; the third time to "lye in halter" for twelve hours and pay a fine. Yet in the same year, the Virginia Assembly passed other legislation encouraging the production of wines and distilled spirits in the colony.

As one modern historian has noted, "It was not the custom of drinking that was unacceptable in early Virginia, but drinking to excess." [65]

In the Massachusetts Bay Colony, brewing came to rank next in importance to milling and baking. There, as in Virginia, occasional drunkenness was punished by whipping, fines and confinement in the stocks. But, as Norbert Kelly writes, "The Puritans neither disdained nor prohibited the use of beverage alcohol. They were emphatic, however, in urging moderation in drinking." [65]

The temperance movement—which sprang in considerable measure from the alcoholic excesses of the Industrial Revolution in England—was not long in coming to America. It began with the goal of temperance in its literal sense: *moderation.* At the peak of this early campaign, in the 1830's, temperance leaders—many of whom themselves drank beer and wine—maintained that the remedy for intemperance was abstinence from distilled spirits only.[52 65]

But the next decades brought a significant change. The meaning of temperance was gradually altered from moderation to total abstinence. All alcoholic beverages were attacked as unnecessary, harmful to health and inherently poisonous. The demand arose for total prohibition.

This demand culminated in the United States in the passage of the 18th Amendment, which prohibited the manufacture and sale of all alcoholic beverages. Beginning in 1920, national prohibition lasted until 1933. Even now, nearly 35 years later, Prohibition remains a controversial subject. Its defenders claim that it brought substantial reduction in drinking, a decrease in drunkenness, and marked economic improvement to the country. Those who oppose the concept say that the experiment curbed only the moderate drinker and brought new and dangerous glamor to drinking and intoxication. They claim that it destroyed public respect for law-enforcement officers and bred the crime, violence and general corruption that marked the bootlegging of illicit liquor.[52]

Whatever the validity of these views, one fact seemed fairly well estab-

lished by the end of the Prohibition era: many Americans liked to drink and would insist with considerable vehemence on their right to drink. There were no signs that their views had changed to any extent by the 1960's.

But, while it has become clear that many and perhaps most Americans would continue to insist on their right to drink, it has also become evident that many Americans are drinking to excess, and endangering the lives and the welfare of themselves, their families, and all those around them. The problem of alcoholism, in fact, is now recognized as a serious public health problem that urgently demands intelligent, practical action based on better knowledge of its causes and potential cures.

II. EXCESSIVE DRINKING: NATURE OF THE PROBLEM

The overwhelming majority of drinkers in the United States—an estimated 90 percent of them [51]—have apparently learned to consume alcoholic beverages without significant hazard to themselves, their families or society. Yet the problems caused by the relatively few who have chosen neither abstinence nor moderation, but have become excessive or problem drinkers, affect the entire American society. Although the ratio of problem drinkers to the total population is relatively small, their numbers are large. The misery they cause themselves and others is enormous.

The "Drinking Problem"

Sociologists have emphasized that a major part of the drinking problem is deciding who and who is not a "problem drinker," for the label is applied differently in various cultural and social groups.

Thus, among those religious groups which devoutly believe in complete abstention, anyone who drinks is a problem drinker. Among groups that consider heavy drinking to be normal and even a proof of maturity—as in French Normandy and Brittany, in some American social groups, and in some vocations—it is the abstainer or light drinker who is singled out for attention. Groups that socially sanction only communal drinking consider the man who drinks alone to have a problem. In some Northern European groups which socially approve of only distilled spirits, the wine drinker is regarded as a problem drinker. But in Southern European societies which favor only wine or beer, the drinker of "hard liquor" is viewed as having a drinking problem.

In most areas of the United States where laws prohibit the sale of alcohol to anyone under the age of 21, the 17-year-old who drinks may be considered a problem by his elders, while the 17-year-old who does not drink may be considered a problem by some of his fellow teen-agers.

The Problem Drinkers

Realistically, the problem drinkers are those who—by all standards—cause significant damage to themselves, their families or their communities because of drinking.

Some are clearly addictive drinkers or alcoholics. In addition, the list of excessive or problem drinkers must include those who are apparently not addicted to alcohol, who show no symptoms of dependency, but whose drinking has nonetheless created serious personal or family problems.

An example may be the man who had always been a light drinker or even an abstainer, who had maintained strong family ties and a good job record and may never have been more than slightly inebriated. But on one occasion he took too many drinks, got into his car and smashed it into a

285-337 O - 68 - 3

crowded bus. Such an individual could not properly be classified as an alcoholic; nevertheless, he has to be considered to have been a problem drinker at that time.

Among excessive drinkers of various types and degrees, most interest has centered on the addictive drinker—the alcoholic. It is frequently thought that alcoholics can be specifically defined, diagnosed and counted. Unfortunately, the situation is not that simple.

Alcoholics: Definition

There is at present no formal definition of alcoholism or of an alcoholic which is universally or even widely accepted. Perhaps the one most widely considered as authoritative is that by Mark Keller of the Center of Alcohol Studies at Rutgers University, which follows closely that of the World Health Organization.

> "Alcoholism is a chronic disease, or disorder of behavior, characterized by the repeated drinking of alcoholic beverages to an extent that exceeds customary dietary use or ordinary compliance with the social drinking customs of the community, and which interferes with the drinker's health, inter-personal relations or economic functioning." [64]

Another important concept, described by Dr. Ebbe Curtis Hoff of the Medical College of Virginia, is based on three facets: (1) There is loss of control of alcohol intake—the victim finds himself drinking when he intends not to drink, or drinking more than he has planned. (2) There is functional or structural damage—physiological, psychological, domestic, economic or social. (3) Alcohol is used as a kind of universal therapy, as a psychopharmacological substance through which the problem drinker attempts to keep his life from disintegrating.[55]

These definitions and others that differ from them only in minor degree do not specify any habitat of the alcoholic; they do not mention any factors of poverty or degradation; they do not mention any particular beverage; and they do not involve the quantity of beverage consumed in any given period. All refer in common to a destructive dependency on alcohol.

Modern concepts of alcoholism no longer attempt to set rigid boundaries between the moderate drinker and the alcoholic. Most professionals concerned now agree that there is no exact point applicable to everyone, below which one can accurately state: "This man is not an alcoholic and can continue to drink safely," nor above which one can state: "This man is now an alcoholic and can never control his drinking."

Disease or Self-Indulgence?

Problems of definition have also been involved in determining whether alcoholism should be treated as a disease, a symptom of immorality, a weakness or self-indulgence.

In 1956, in an unprecedented action by a major group in organized medicine, the American Medical Association decided by a formal vote of its House of Delegates that "alcoholism must be regarded as within the purview of medical practice." [2] This move, later supported by other medical and hospital groups, has been credited with dramatically altering the position of the alcoholic. Because of it, treatment has been sought by many

alcoholics who otherwise would have remained hidden, as untreatable victims of an irresponsible craving.[84]

Two court rulings during the early part of 1966 have further supported the view that alcoholism is a medical problem. The United States Court of Appeals for the Fourth Circuit overturned the public drunkenness conviction of a North Carolina man on the grounds that it was unconstitutional to punish a person for acts he could not control.[36] Similarly, the U.S. Court of Appeals for the District of Columbia ruled that chronic alcoholism is not a crime.[37]

The District of Columbia ruling held that proof of chronic alcoholism is a defense against a drunkenness charge because the defendant "has lost the power of self-control in the use of intoxicating beverages."

Many people do feel that the alcoholic may be no more responsible for his drinking than, for instance, a tuberculosis patient is responsible for his coughing. They believe, however, that such patients must be brought to understand that they have a moral responsibility to seek treatment and to make all possible efforts to help themselves.

This attitude is, however, far from universal. There are those who still insist that the "disease" concept merely provides the alcoholic with a comforting alibi, and he can therefore claim that since he is sick he has no responsibility for his continued drinking.[96 127]

The Habitat of Alcoholics: The Skid Row Myth

A firmly entrenched belief in some quarters is that most if not all alcoholics are on Skid Row—the most dilapidated section of almost every large community—and that most if not all Skid Row inhabitants are alcoholics. As a consequence, it has been thought that eradicating Skid Rows would eradicate alcoholism, and that the end of alcoholism would mean the end of Skid Rows.

But investigation has shown that many people on Skid Row are not alcoholics or even heavy drinkers.[8 12] A Chicago study found that the majority of the so-called Skid Row bums could not be classified as excessive drinkers.[17] A New York study showed that fewer than 45 percent of the men on the Bowery were alcoholics, while more than 55 percent were moderate or non-drinkers.[130]

From other research, it is obvious that most excessive drinkers are not Skid Row derelicts. More than 70 percent of them reside in respectable neighborhoods, live with their husbands or wives, try to send their children to college, belong to the country club, attend church, pay taxes, and continue to perform more or less effectively as bank presidents, housewives, farmers, salesmen, machinists, stenographers, teachers, clergymen and physicians.[8 12]

The types of beverage consumed on Skid Row are most frequently a low-cost dessert wine in the United States,[77] a low-cost table wine in France,[119] a native whiskey (cachaça) in Brazil,[105] and a low-cost vodka in Russia, Poland, Sweden and Finland.[26 132]

There is no evidence to show that any one of these beverages is, in itself, the direct cause of excessive drinking or alcoholism, or that alcoholics are

addicted to any one particular beverage. Instead, it is believed that alcoholics are addicted to—physically or psychologically dependent on—alcohol. If one beverage is unavailable, they will usually turn to another.[133]

Consumption by Alcoholics: The "Safe-Level" Myth

In the United States and Europe, attempts have been made to establish a "safe level" of drinking—the amount of distilled spirits, wine or beer that can be consumed daily without danger. In France, such attempts have led to the widely publicized admonition of "no more than a liter of wine per day." But researchers have found that many alcoholics consume on the average less than the equivalent of a liter of wine a day, while some social drinkers consume more.[119]

Experts have concluded that *how much* one drinks may be far less important than *when* he drinks, *how* he drinks and *why* he drinks.

III. EXCESSIVE DRINKING: SCOPE OF THE PROBLEM

To those who believe in abstinence, any drinking of any alcoholic beverages in any amount is excessive drinking. To the majority, however, problem drinking occurs when anyone drinks to such an excess that his ability to control his actions and maintain a socially acceptable life adjustment is impaired.

The extent of this kind of drinking has been expressed in terms of the number of people involved, traffic accidents, manpower losses, juvenile delinquency, deaths and financial burdens to the community. While such figures have been widely accepted as scientific fact, most of these measurements are only rough estimates. For example, alcoholism has been frequently cited as the fourth-ranking public health *problem* in America, surpassed only by heart disease, cancer and mental disease. There is, however, no accepted ranking of diseases as "public health problems." If such a listing could be prepared, it is not known whether alcoholism would be properly ranked fourth—or second, tenth or twentieth.

The Number of Drinkers

The number of Americans who use alcoholic beverages is not known exactly. Estimates suggest that the percentage has been increasing steadily for at least a century. A 1965 nationwide survey [30] by the Social Research Group of George Washington University, which was based on a weighted sample of 2,746 subjects, indicated that 68 percent of all American adults—77 percent of the men and 60 percent of the women—drink at least occasionally. And, while the proportion of men drinkers in the adult population has remained about constant in the past 20 years, the proportion of women drinkers has risen.

Out of all adults, the survey classed 56 percent as infrequent to moderate drinkers and 12 percent as heavy drinkers. The latter are not necessarily alcoholics but they do include the problem drinkers. They are more apt to be men than women (at a ratio of four to one) and—compared to abstainers and moderate drinkers—are usually younger and wealthier, entertain more, go to church less, and form closer friendships with fellow workers than with neighbors.

A 1963 survey [95] found that the proportion of those who drink at all was highest in the Middle Atlantic and New England States and lowest in the South Central States, highest among those under the age of 39 and lowest among those over the age of 60, highest among Jews and Catholics and lowest among Baptists. In general, the proportion of those who drink was highest among residents of large communities, and those with higher education, income and vocational status. Drinking was reported by 79 percent

of those who were single, 72 percent of those who were married, 69 percent of those who were divorced, and 51 percent of those who were widowed. For the widows and widowers, the low percentages may have been more a reflection of age than of marital status.

The Number of Problem Drinkers

Because of such problems as poor health or marital troubles attributed to drinking by the drinkers themselves, by their employers or by the police, ten percent of the drinkers studied in the 1963 survey could be categorized as problem drinkers.

The percentage of problem drinkers by this definition was highest in the Western part of the United States, and among males, residents of the larger cities, the divorced or unmarried, those with the least and those with the most education, and those with the lowest and those with the highest vocational status. The lowest rates were found among Lutherans, Congregationalists, Presbyterians, Episcopalians, and Jews.

The findings from this survey suggest that the drinker in a group in which drinking is less prevalent may be the most likely to encounter trouble because of his drinking.

The Number of Alcoholics

Estimates of the number of alcoholics in the United States are among the most publicized—and challenged—of statistics on alcoholism. According to the Rutgers Center of Alcohol Studies, the number may be between four million and five million—approximately four percent of the total adult population.[38]

Temperance groups and many alcoholics and their friends and relatives have claimed the figure is too low. Others have declared that it is too high. Actually, the number of alcoholics is unknown.

Much of the confusion on this subject has stemmed from misapplications and remarkably diverse interpretations of the "Jellinek formula," developed during the 1940's by the late Dr. E. M. Jellinek of Yale. This method uses the total number of deaths from diagnosed cirrhosis of the liver as a basis for estimating the number of alcoholics in an area. Statisticians state that the formula is not reliable,[38 108 120] and Jellinek himself recommended in 1959 that it no longer be used.[61]

Sex Differences

Until the 1950's, it was estimated that there were five or six male alcoholics in the United States for every female alcoholic. In the 1960's, the estimated ratio had reportedly dropped to four to one, or even lower.[15 29]

Many students of the problem have suggested that the increase in the number of female alcoholics noted during recent years is primarily due to the growing willingness of such women to seek treatment and may, therefore, be more apparent than real.[15]

Regional Alcoholism Rates

Prominence given to apparent differences in the reported rates of alcoholism in various cities and States has provoked much regional embarrassment or pride, but the comparisons are not believed to be reliable.

Since these estimates are usually based on the Jellinek formula, using rates of *diagnosed* cirrhosis of the liver as determined at autopsy, the figures in many instances may reflect not differences in alcoholism but differences in the manner of detecting or reporting cirrhosis.[108]

Risk of Alcoholism

The only absolute insurance against alcoholism or problem drinking is lifelong abstinence. The risk of alcoholism—the number of alcoholics as related to the number of people who drink—cannot be stated with such certainty. If the number of adult drinkers in the United States is *assumed* to be about 80,000,000, and the number of alcoholics *assumed* to be 4,500,000, the risk rate among drinkers in this country would appear to be approximately 5.6 percent, or one in 18.

There is no support for such publicized assertions as "one out of every ten drinkers"—or "one out of every three"—is now fated to become an alcoholic.

Trends in Alcoholism Rates

Although it is frequently claimed that the *rate* of alcoholism in this country is mounting rapidly, there is no conclusive scientific evidence that this is so. In general, the data are so incomplete, the methods of diagnosing and reporting in different communities and professional groups so different, and the interpretations so controversial, that it is impossible to determine today if the rate of alcoholism is increasing, decreasing or remaining steady.

A recent study conducted by the National Institute of Mental Health [73] shows, however, an increase in the rate of admissions of alcoholics—particularly those with the most severe forms of the disease—to State mental hospitals. Findings reveal that one in seven newly admitted patients in such institutions is an alcoholic—an 18 percent rise in ten years. In nine States, alcoholism leads all single diagnoses in mental hospitals.

At the same time, the number of clinics and beds in general hospitals which treat alcoholics has increased—by as much as 50 percent in some areas during the past few years. Also, the rise in the number of alcoholics receiving treatment in both public and private hospitals and clinics is proportionately greater than the increase in the American population. Some investigators conclude that the rise in the number of alcoholics in State mental hospitals probably reflects a true increase in alcoholism rates in the Nation as a whole. Others suggest the reported rise is the result of changes in classification procedures and in hospital admission policies.

Alcoholism Deaths

According to the latest national figures (for 1964), alcoholism—including alcoholic cirrhosis and alcoholic psychosis—accounted for about 0.8 percent of all deaths.[137]

Some authorities contend that this percentage is far too low. Undoubtedly alcohol and alcoholism contribute to many deaths which are attributed to other causes. Some physicians avoid putting alcoholism on the death certificate when it would embarrass the survivors of the deceased.

Some estimates have indicated that the life expectancy of alcoholics is approximately 10 to 12 years less than the average.[54]

Traffic Accidents

The National Safety Council has reported that traffic accidents in 1965 took 49,000 lives, caused 1,800,000 disabling injuries and cost about $8.9 billion in property damage, wage losses, medical expenses and overhead costs of insurance.[99]

Alcohol has unquestionably played a role in this tragic toll. Here the problem concerns not only alcoholics but also non-addicted individuals who have had too much to drink.

The Public Health Service's Injury Control Program estimates that alcohol contributes to or is associated with 50 percent of fatal motor vehicle accidents.

Recent research, conducted with the use of alcohol tests on blood, breath or urine, has demonstrated that this estimate may be too low.[101] For example, studies in New York, Ohio, Montana, Arizona, Delaware, Maryland, New Jersey and Connecticut have indicated that 47 to 87 percent of the drivers in fatal accidents had been drinking. A 1959 investigation in New York showed that 75 percent of such drivers had blood-alcohol levels of more than 0.10 percent—0.10 grams of alcohol per 100 cc of blood.[99]

A year-long California study in 1962 found that 62 percent of the drivers and 40 percent of the pedestrians in fatal accidents had been drinking; and 53 percent of the drivers and 32 percent of the pedestrians had blood-alcohol levels of more than 0.10.[100]

Statistics from a preliminary study by Indiana University's Department of Police Administration show that the worst drunk-*driving* records belong to men between the ages of 25 and 44, men and women who are widowed, separated or divorced, and those who drink frequently or have a recognized drinking problem. In contrast, the worst drunk-*accident* records are found among women, men and women who are single, and those who drink only about once a month. Teenagers, the study revealed, have a high accident rate, but alcohol is rarely involved in their accidents.[19]

Efforts to reduce driving while under the influence of alcohol include improved public education programs, establishment of uniform State laws which would give police the right to determine blood-alcohol levels of any suspected driver; reduction of the prima facie level of intoxication to 0.10 percent or lower, as it is in some European countries; and, particularly, more stringent law enforcement.[18]

Public attitude has been called the greatest obstacle to a successful attack on the drinking driver. The Indiana investigators report that juries, unless they are composed entirely of teetotalers, tend to identify themselves with the defendant in drunk-driving cases, and to sympathize with his plight—particularly as he often appears at the trial as a sober and upstanding citizen.[20]

It is evident, nevertheless, that enforcement alone cannot provide a complete solution to the problem of driving while under the influence of alcohol. One of the most rigid and efficient enforcement programs has been

applied in Sweden for many years, and yet the drinking-driving problem there has remained serious.[4]

The Cost to Industry

American industry generally refused to recognize any "problem with alcohol" until the late 1940's. Until that time, many employees judged to be alcoholic were summarily fired. But this quick and simple solution solved nothing for the employee, nothing for the community, and very little for the company. By the 1960's, the attitude in some industrial organizations—though by no means in all of them—had undergone a marked change, and there was growing recognition of the costs of alcoholism to business and industry. Those costs are estimated now to be $2 billion per year, and the problem has been labeled "industry's $2 billion hangover."

This estimate was developed by the National Council on Alcoholism,[114] in cooperation with a number of typical American firms. It is based on an assumption that, as of 1965, (1) about three percent, or 1,700,000 of an industrial, business and government work force of 55 million were alcoholics; (2) their average salary was about $5,000; and (3) each alcoholic's cost to his company for lost manpower, inefficiency, replacements, fringe benefits and invested training expenses was a minimum of one-fourth of his salary, or $1,250 a year.

Additional costs—impossible to determine accurately—may include friction with co-workers, lowered morale, bad executive decisions, and deteriorated customer and public relations. Unquestionably excessive drinking results in the loss of trained and experienced employees. This last factor can be especially damaging to a company, since alcoholic employees are usually in their middle years with many years of service. Such experienced workers are among the most valuable assets of any firm.

Alcohol and Crime

There is abundant testimony linking alcoholism and other forms of excessive drinking with arrests for crime.

Of a nationwide total of 4,955,047 arrests listed for 1965 by the Federal Bureau of Investigation, 2,225,578, or about 45 percent, were for offenses of drunkenness—public intoxication, disorderly conduct and vagrancy.[136] The cost to America's taxpayers for the arrest, trial and maintenance in jails of these excessive drinkers has been estimated to be many millions of dollars a year.

Sociologists have noted that the arrests for drunkenness probably involve only a relatively small number of a community's excessive drinkers, mostly Skid Row inhabitants who are arrested, jailed, released and arrested again, time after time. This is the so-called "revolving door" procedure which prevails in most communities.[112]

New York City seems to be an exception, with only about three percent of arrests charged to intoxication. This unquestionably reflects not a low rate of excessive drinking but a different philosophy toward the problem, and greater adherence to a judicial ruling in 1936 that arrests and jail should not be used to combat what is a public health problem.[97]

Additional investigation is needed to clarify the significance of alcohol in more serious crimes. Police records indicate that alcohol is often involved in homicide, assault, offenses against children, and theft, but to what extent has not been established. A recent California study of more than 2,000 felons concluded that "problem drinkers were more likely to get in trouble with the law because of their behavior while drinking or because they needed money to continue drinking." [24]

Alcohol and Brain Damage

There is no evidence that moderate consumption of alcohol has an appreciable effect on the permanent structure or function of the brain or other nerve tissues. However, brain damage has been observed in those who drink excessively for many years. This has been attributed to a deficiency of vitamins, proteins and other essential nutrients.[29] In many cases of mental disease among alcoholics, the cause may be an underlying psychosis or other emotional condition which contributes both to the abnormal behavior and the excessive drinking.

Alcohol and Family Problems

Among the most destructive effects charged against excessive drinking are unhappy marriages, broken homes, desertion, divorce, impoverished families and deprived or displaced children. The cost to public and private agencies for support of families ravaged by alcoholism has been put at many millions of dollars a year. The cost in human suffering is incalculable.

It should, however, be understood that when excessive drinking is involved in these social catastrophes, it may not necessarily be the primary cause. In many broken marriages, the complaint is heard: "Everything was all right until my husband started drinking too much." But perceptive marriage counselors have asked: "If everything was all right, then why did he start drinking too much?"

It is clear that not only does the alcoholic affect his family; the family also affects the alcoholic and the severity of his illness. Solutions to such tangled relationships usually pose problems that can be resolved only if the biological, psychological and sociological aspects of the specific situations are placed in balance for each member of the family.

Teenage Drinking

Adult concern about the use of alcohol by young people in the United States during recent years has been directed primarily toward the supposed relationship of juvenile drinking to juvenile delinquency. Accounts of riots and automobile accidents, attributed correctly or not to teenage drinking, are so alarming to most adults that the violence of these events often obscures the facts.[87 128]

Much attention has been focused on the percentage of teenagers who drink, and the age at which they first taste alcoholic beverages. Surveys indicate that the average American first tastes alcohol—usually in the form of an experimental sip—by the age of 10. As many as 50 to 85 percent of high school students, depending on the area, say they drink at least occasionally.[85 87]

"These figures, however, as shocking as they may seem, are meaningless in themselves," says Dr. Robert Straus, of the University of Kentucky. "There is no proof to show that early exposure to alcohol will in itself lead to excessive drinking in later life. In fact, all the proof is clearly to the contrary."

Although a teenager who drinks is frequently assumed to be a delinquent, a recent Massachusetts investigation [11] showed that the percentage of alcohol users is about the same among delinquents as among normal high school students. The chief difference, the study concluded, is not how many of each group drink but how they drink.

Research shows that teenagers follow adult models in their drinking patterns, and the best single indicator of the teenage drinking pattern in any specific community is the adult pattern in the same community. If parents drink, there is a high probability that teenagers will drink; similarly, abstinent parents typically produce abstinent children.

For both adults and teenagers, drinking patterns vary with sex, socioeconomic status, religion, ethnic background, rural or urban residence, and other factors.

These findings are based on five studies involving 8,000 high-school students within the last ten years in five areas of the United States: Nassau County, New York; Wisconsin, Michigan, Utah and Kansas.[86] A summary of additional findings shows:

1. The average age at which students had their first drink is 13-14, although they may have "tasted" alcohol before.
2. First exposure is likely to be at home with parents.
3. Practically every high-school graduate will have experimented with at least one drink.
4. One in four users claimed to have been "high" at least once during the month prior to the research, in the New York, Wisconsin and Kansas studies.
5. One in ten users in these studies reported having been "drunk" in this same period.
6. In all the studies, beer was the most commonly used beverage.
7. Laws relating to teenage drinking had little relationship to drinking practices.

The rate of problem drinking among teenagers is apparently related to attitudes toward drinking. For example, research has revealed that children in Italian-American [78] and Jewish families [124] are exposed to alcohol at a very early age—sometimes as young as two to three years—but grow up to have the lowest rates of alcoholism of any cultural groups in the United States. By contrast, some of the highest rates of alcohol addiction have been found in groups in which children are under strong pressure to refrain from drinking until they are 21.[7 46]

Drs. Robert Straus and Selden D. Bacon, in their studies of college drinking,[129] have attempted to define the relationship between the incidence of drinking and the extent to which students become intoxicated. In their investigation, covering 27 colleges and 17,000 students, they found that those colleges with the lowest percentage of drinking students were gener-

ally marked by the highest percentage of students who had been intoxicated. By contrast, excessive drinking was reportedly infrequent in those colleges where student drinking was most common.

The college study also found that those students who violate the accepted drinking customs of their families are apt to go further in their drinking than do students for whom drinking is acceptable behavior. Thus, among the relatively few Mormon students who drank, 42 percent of the males and 41 percent of the females reported the occurrence of "social complications" as a result, while such problems were described by only 20 percent of the males and 2 percent of the females among the many Jewish students who drank.

In summary, a young person's decision to drink or not to drink is usually made on the basis of a complex of forces including the practices and wishes of his parents, the attitudes of his church, the influence of his peers, how much money he has to spend, and how strongly he may be impelled to assert his independence from adult authority.

The majority of teenagers seem to have tasted alcohol on more than one occasion. Few of them have learned much in their own homes about its use.

IV. THE CHEMICAL COMPOSITION OF ALCOHOLIC BEVERAGES

In all the major alcoholic beverages—beers, table wines, cocktail or dessert wines, liqueurs or cordials, and distilled spirits—the chief ingredient is identical: ethyl alcohol, known also as ethanol or simply as alcohol. The concentration is usually about 4 percent by volume in beers, 12 percent in table wines, 20 percent in cocktail or dessert wines, 22 to 50 percent in liqueurs and 40 to 50 percent (80 to 100 proof) in distilled spirits.

In addition, these beverages contain a variety of other chemical constituents. Some come from the original grains, grapes or other fruits. Others are produced during the chemical processes of fermentation or during distillation or storage. Others may be added as flavoring or coloring.

Modern investigations have shown that many of these non-alcoholic substances do more than contribute to color, flavor, aroma or palatability. Some may have a direct effect on the body in themselves. Others apparently affect the rate at which alcohol is absorbed into the blood and the rate at which it is oxidized or metabolized in the tissues.[70]

The critical factor in analyzing the effects of drinking is not the amount of alcohol which is drunk or which reaches the stomach, but the amount which enters the bloodstream and the speed at which it is metabolized.[49 70] Only after the alcohol has been absorbed from the digestive tract into the blood and carried to the brain and other tissues do its most important physiological and psychological effects become apparent.

Studies at such institutions as Yale University,[51 53] Stanford University,[102 103] the Institute of Nutrition in Rome [76] and the Karolinska Institute in Stockholm [49] have demonstrated that beers, wines and distilled spirits may vary markedly in the rate at which the alcohol they contain is absorbed into the blood. In general, the higher the concentration of the alcohol, the more rapid is its absorption, and the higher the concentration of nonalcoholic components, the slower its absorption.

The "Congeners"

The use of the term "congeners"—at one time the name for the various non-ethyl alcohol substances in alcoholic beverages—has often been misleading. Strictly defined, "congener" means "of the same kind," and thus would seem to apply only to such other alcohols as methyl, propyl and isopropyl. But such beverages as beers and wines also contain many organic acids, aldehydes, ketones, esters, minerals, salts, sugars, anti-bacterial compounds, amino acids and vitamins which are clearly not alcohols but are nonetheless often called congeners.

The notion that all "congeners" are toxic, unhealthy or otherwise undesirable is invalid since some of the non-alcoholic substances—such as the salts, sugars, amino acids and vitamins—are nutritionally useful.

The Fusel Oils

Certain of these components of alcoholic beverages—especially some of the higher alcohols known as fusel oils—are relatively more toxic than ethyl alcohol. But these usually occur in such low concentrations that they pose no clinically significant hazard.[70]

Contrary to the popular belief that fusel oils occur primarily in new, raw, or unaged whiskey, and similar spirits, and cause most of the objectionable taste and aroma of such beverages, chemical analysis has shown that their concentration actually increases with aging.[72]

The Value of Chemical Data

The rapidly growing knowledge of the chemical composition of the various alcoholic beverages has obvious importance to the beverage industry in controlling the taste, aroma and appearance of its products. It also has value to scientists engaged in investigating allergic reactions to these beverages, their effects, clinical applications and hazards.

29

V. EFFECTS OF ALCOHOLIC BEVERAGES ON THE BODY

It was long believed that the actions of beer, wine and distilled spirits on the body and the mind could be measured simply in terms of the quantity of alcohol consumed. As a result, much of the classical laboratory research in this field was conducted with pure alcohol. It has now been demonstrated that the situation is far more complex and that many of the findings made with plain alcohol solutions do not necessarily apply to alcoholic beverages.

Further, it has been shown that the effects produced by alcohol taken on an empty stomach are far different from those produced by the same amount of alcohol taken with food. The effects on a light drinker are usually different from those on a heavy drinker. Also, the effects produced by the same amount of alcohol may differ from individual to individual, and even in the same individual from month to month or from day to day.

Absorption

Under ordinary conditions, the alcohol in any beverage is absorbed relatively quickly—some through the stomach, but most through the small intestine—and then distributed generally throughout the body. The absorption can be markedly influenced by a number of factors.[47 49 70]

1. *Alcohol concentration.* The greater the alcohol concentration of the beverage—up to a maximum of about 40 percent (80 proof)—the more rapidly the alcohol is absorbed and the higher are the resulting peak blood-alcohol concentrations. With identical amounts of alcohol swallowed, the highest blood-alcohol levels are produced by undiluted distilled spirits, and the lowest by beers.

2. *Other chemicals in the beverage.* The greater the amount of non-alcoholic chemicals in the beverage, the more slowly the alcohol is absorbed. For this reason, too, the alcohol in distilled spirits—especially vodka and gin—is absorbed most rapidly, and that in table wines and beers most slowly.

3. *Presence of food in the stomach.* Eating with drinking has a notable effect on the absorption of alcohol, especially when alcohol is consumed in the form of distilled spirits or wine. When alcoholic beverages are taken with a substantial meal, peak blood-alcohol concentrations may be reduced by as much as 50 percent.

4. *Speed of drinking.* The more rapidly the beverage is ingested, the higher will be the peak blood-alcohol concentrations. Thus, these levels are lower when the beverage is sipped or taken in divided amounts than when it is gulped or taken in a single dose.

5. *Emptying time of the stomach.* In a number of clinical conditions, such

as that marked by the "dumping syndrome," the stomach empties more rapidly than is normal, and alcohol seems to be absorbed more quickly. Emptying time may be either slowed or speeded by fear, anger, stress, nausea, and the condition of the stomach tissues.

6. *Body weight.* The greater the body weight of an individual, the lower will be the blood-alcohol concentration resulting from ingestion of a standard amount of alcohol. The blood-alcohol level produced in a 180-pound man consuming four ounces of distilled spirits, for example, will generally be substantially lower than that occurring when the same amount is taken by a 130-pound man in the same length of time.

Metabolism

Once absorbed and distributed by the blood, the alcohol undergoes metabolic or oxidative changes. A major part of these processes occurs in the liver. The alcohol is changed first into acetaldehyde, a highly irritating, toxic chemical, but this rarely accumulates and is oxidized quickly to acetate.

The acetate—the same as that produced as an intermediate in sugar metabolism—is transformed into a variety of other compounds, and eventually is oxidized completely to carbon dioxide and water.[42] The total metabolic process yields approximately seven calories of energy for each gram of alcohol.

Research has demonstrated that the rate of alcohol metabolism, like that of alcohol absorption, may be influenced by a number of factors. A Massachusetts General Hospital study has shown that both alcoholic and nonalcoholic subjects maintained on good diets can moderately increase their rate of alcohol metabolism if they consume substantial amounts over a long period of time. In general, it appears that the rate of alcohol metabolism may have a small influence on behavioral tolerance to alcohol, but that no significant differences in ability to oxidize alcohol differentiate the alcoholic from the nonalcoholic.[91] At the Karolinska Institute in Stockholm, it has been reported that normal drinkers can metabolize on the average approximately seven grams per hour of pure alcohol; eight grams in the form of whiskey; nine grams in the form of dessert wine; twelve grams in the form of table wines; and nine to eleven grams in the form of beer.[49]

Considerable effort has been devoted to a search for some method which could effectively speed the rate of alcohol metabolism and thus be useful in the treatment of intoxication. Particular interest has been expressed in the administration of insulin, tri-iodothyronine and other agents, although none has yet been found to make any clinically significant difference in the rate of alcohol metabolism.[68]

Excretion

Although most of the ingested alcohol is metabolized, from two to five percent is excreted chemically unchanged, mostly in urine, breath and sweat.

Stimulant or Depressant?

As with most other biologically active chemicals, the general physiological effects of alcohol depend on the amount or concentration in the

specific cells, tissues or organs affected. In most organisms, from the simplest bacteria to the most complex mammals, the very lowest concentrations of alcohol in the cells may stimulate the activity of those cells. In higher concentrations, it can depress functions, seriously injure cells, or even kill them.[70]

It is impossible to state the specific amounts of alcoholic beverages that will give specific concentrations of alcohol in the blood. In general, it has been found that a 155-pound moderate drinker rapidly consuming 90-proof whiskey on an empty stomach will probably have a peak blood-alcohol level of 0.05 percent—0.05 grams per 100 cc of blood—with 3 ounces, 0.10 with 6 ounces, 0.20 with 12 ounces and 0.30 with 15 ounces.[134]

The blood-alcohol level may be slightly higher if the drink is gin or vodka rather than whiskey, or if the drinker weighs much less than 155 pounds. The level will be lower if the beverage is beer or wine, if the drinking is spaced over a prolonged period, if the drinker weighs more than 155 pounds, or if solid foods are eaten at the same time.

These levels have important legal implications. In most parts of the United States and in some countries of Europe, an individual is legally presumed to be sober and in condition to operate a motor vehicle with a blood-alcohol level of 0.05 percent or less, while one with a level of 0.15 or more is legally intoxicated or "under the influence."

Effects on the Brain

The most notable and dramatic effects of alcohol are those on behavior attributed to the action of alcohol on the brain. These are related not necessarily to the amount of alcohol drunk but to the concentration in the blood. Very low blood-alcohol levels usually produce mild sedation, relaxation or tranquility. Slightly higher levels, at least in some people, may produce behavioral changes which seem to suggest stimulation of the brain—garrulousness, aggressiveness, and excessive activity—but which may result from depression of the brain centers which normally inhibit or restrain such behavior. At still higher levels, greater depression of the brain occurs, producing incoordination, confusion, disorientation, stupor, anesthesia, coma or death.

Due to variations among individuals, it is not possible to give the exact concentrations at which these various changes occur. For most people, however, it is usually accepted that blood-alcohol levels up to 0.05 percent will induce some sedation or tranquility; 0.05 to 0.15 may produce lack of coordination; at about 0.15 to 0.20, intoxication is obvious; 0.30 or 0.40 may produce unconsciousness; and levels of 0.50 or more may be fatal.

Earlier investigators proposed that these actions of alcohol were due to direct effects on relevant parts of the brain—first the cerebral cortex, the most highly developed portion of the brain, depressing critical faculties and reasoning powers, and producing the behavior pattern characteristic of drunkenness. With larger doses, it was believed, alcohol would directly depress successively lower levels of the brain, eventually striking vital centers in the medulla, such as the one which controls respiration.

Newer observations, however, have led investigators to suggest that alcohol may act from the start upon a regulatory structure which in turn modifies the activity of the cortex and other parts of the nervous

system. This regulatory structure is the reticular formation, the so-called master switchboard or activating system of the brain. Even under the influence of low blood-alcohol concentrations, it has been found, the reticular formation not only affects brain function but also serves as an intermediary in producing the sensation of warmth, flushing of the skin, relaxation of muscles, reduction of blood pressure in peripheral vessels, stimulation of gastric secretion and increased peristalsis—all typical reactions to alcohol.[63]

Effects on Skilled Performance

It has not been clearly established whether there is a threshold below which alcohol has no detectable influence on reflex responses, reaction time and various complex skills. When the blood level reaches 0.03 or 0.04 percent, it is generally agreed that changes are evident.[10]

At very low blood-alcohol levels, such simple reflex responses as the knee-jerk seem to be more rapid. At levels above 0.03 or 0.04, reflex responses, reaction-time responses and performances in such activities as automobile driving and many kinds of athletics generally change for the worse. Significantly, as a driver's performance is impaired, his judgment often deteriorates, and he believes he is driving better. A British investigator[35] has found that for motorists the added risk is small and probably not significant up to about 0.05. Above that level, the risk rises sharply.

Effects on the Liver

Cirrhosis of the liver occurs about eight times as frequently among alcoholics as among non-alcoholics. It also occurs in non-drinkers. Its cause is the subject of continuing investigation. Cirrhosis has been reported to be caused not only by alcohol but also by filtrable viruses, parasites, overexposure to carbon tetrachloride and other chemicals, excessive ingestion of sugar and soft drinks, and a deficiency of essential nutrients, especially proteins and certain vitamins.

Whether cirrhosis can be produced in man by excessive quantities of alcohol in combination with an adequate diet remains uncertain. Many scientists seem convinced that adequate nutrition provides an effective protection against cirrhosis. Some recent investigations, however, have shown that large amounts of alcohol may cause liver damage even in well-fed subjects.[58 71]

Effects on Other Organs

In moderate quantities, alcoholic beverages slightly increase the heart rate, slightly dilate blood vessels in arms, legs and skin, moderately lower blood pressure, stimulate appetite, increase the production of gastric secretion, and markedly stimulate urine output. The action on the kidneys has been attributed to alcohol's inhibition of a pituitary hormone.[66]

Deficiency Diseases

In the past, alcohol has been held responsible for a wide variety of diseases which were seen often in heavy drinkers. These include "gin-drinker's heart," "beer drinker's heart," "wine-drinker's stomach," irritations of the mucous membranes of the mouth, Wernicke's disease, Korsa-

koff's disease and "alcoholic pellagra." Physicians generally believe these conditions are caused mainly by nutritional deficiencies.[131] [138]

Resistance to Infection

The lowered resistance of alcoholics to pneumonia and other infectious diseases has long been known, and is usually attributed to malnutrition. Recent research at Cornell University has shown that lowered resistance may also occur in well-nourished heavy drinkers, and appears to result from a direct interference with immunity mechanisms. With blood-alcohol levels of 0.15 to 0.25 percent, produced by intravenous administration of alcohol, the inhibition of white-blood cell mobilization was found to be as intense as that found in states of severe shock.[21]

Gout

An old tradition is the belief that port wine is the cause of gout. A nationwide study conducted by a group of investigators at the University of California has shown, however, that more than 60 percent of all gouty patients had never drunk wine in any form before the onset of their disease.[39] In patients whose gouty attacks seem to be precipitated by ingestion of alcohol, physicians have often noted that such factors as mental stress, infection, cessation of physical exercise, or ingestion of purine-rich foods were also involved.

The Hangover

The hangover is a common, unpleasant but rarely dangerous after-effect of overindulgence occurring in the moderate drinker who occasionally takes too much, as well as in the excessive drinker after a prolonged drinking bout. The exact mechanism is unknown. The symptoms are usually most severe many hours after the peak of the drinking bout, when little or no alcohol can be detected in the body.[48] Although hangover has been blamed on mixing drinks, it can be produced by any alcoholic beverage alone, or by pure alcohol. There is inadequate evidence to support beliefs that it is caused by vitamin deficiencies, dehydration, fusel oils or any other non-alcoholic components.

No satisfactory specific treatment for hangover is known, and there is no scientific evidence to support such popular remedies as coffee, raw egg, oysters, chili peppers, steak sauce, "alkalizers," vitamin preparations, or such drugs as barbiturates, thyroid, amphetamine or insulin. For general treatment, physicians usually prescribe aspirin, bed rest, and ingestion of solid foods as soon as possible.

Effects on Longevity

There is little evidence to demonstrate whether or not drinking has an appreciable effect on longevity. Frequently cited are the findings of Raymond Pearl, who reported the shortest life expectancy for heavy drinkers, a somewhat higher expectancy for abstainers, and the highest for moderate drinkers.[109] [110]

VI. CAUSES OF ALCOHOLISM

Over the past decades many different factors have been suggested as the cause of alcoholism. None has yet been accepted as the single causative agent.

Physiological Factors

Much effort has been exerted to find chemicals in specific beverages which might be responsible for alcohol addiction, or physiological, nutritional, metabolic or genetic defects which could explain excessive drinking. To date, these attempts have not succeeded. So far, it has been impossible to produce clear-cut alcohol addiction by any practical means in experimental animals.[91]

Although alcoholism occurs frequently in the children of alcoholics, and thus may seem to have some hereditary basis,[106] it also occurs in the children of devout abstainers.[13] Anne Roe and others have observed that children of alcoholics can be protected if they are reared away from their parents.[60 116] This has added to the belief that alcoholism is related more *to environment than to genetic factors.*

It has been suggested that alcoholism is caused by vitamin deficiencies or hormone imbalances. For example, much research by Dr. Roger Williams and his associates at the University of Texas [142] has demonstrated that increased alcohol intake in experimental animals may be induced by such deficiencies, but his findings have not been found applicable in human beings. Most of the nutritional and hormonal deficiencies observed in far-advanced alcoholics appear to be results rather than causes of excessive drinking.[91]

Allergy has been blamed for some cases of alcoholism, but there is no proof that alcoholics are generally allergic to alcohol itself or to other components of alcoholic beverages.

Although it is frequently said that alcoholics are unable to metabolize alcohol as rapidly as normal individuals, recent research has indicated that many actually metabolize it more rapidly when they are drinking heavily.[91] Whether alcoholics metabolize alcohol in a different manner—perhaps through different enzymatic processes—is not known.

It has been suggested periodically that addiction may be due to certain non-alcoholic components present in beer, wine, whiskey, rum and brandy. Investigations have shown, however, that alcoholism also occurs in users of alcoholic beverages very low in these components, such as brännvin in Sweden and Finland, and vodka in Russia, Poland and the United States.[70]

Although alcoholism would be impossible without alcohol, alcohol can no more be considered its sole cause than marriage can be considered the sole cause of divorce, or the tubercle bacillus the sole cause of tuberculosis.

If addiction were caused entirely or even largely by over-exposure to

alcohol, the highest rates of alcoholism might logically be expected among groups with the highest per capita intake of alcohol. No such general relationship can be found. Although a high alcohol intake with a high rate of alcoholism has been reported in France,[119] a high intake but a low rate of alcoholism has been reported in Italy[78] and Greece,[16] and a relatively low intake but a high alcoholism rate in the United States[70] and Sweden.[132]

Even though research to date has not indicated any chemical, physiological or genetic factor as a cause of alcoholism, the possibility that such a physical factor exists cannot be ruled out, and further investigations are essential.

Psychological Factors

It is believed by some people that alcoholics are psychologically "different," that they possess a number of traits which in common make up the "alcoholic personality." There is, however, no agreement on the identity of these traits, nor on whether they may be the causes or the results of excessive drinking.

Psychologists and psychiatrists have described alcoholics as neurotic, maladjusted, unable to relate effectively to others, sexually and emotionally immature, isolated, dependent, unable to withstand frustration or tension, poorly integrated, and marked by deep feelings of sinfulness and unworthiness. Some have suggested that alcoholism is a disastrous attempt at the self-cure of an unseen inner conflict, and might well be called "suicide by inches."[94]

Freud and others proposed that excessive drinking may represent attempts to repress unconscious homosexual instincts, and thus the "two-fisted, he-man" drinker is in reality drinking heavily to cover his underlying homosexual drives.[25] Still others have attributed alcoholism to an unconscious need to dominate, or an attempt to escape from guilt feelings, or an inability to give or accept tenderness or love.[75] Many researchers have accumulated data to demonstrate that alcoholics often come from broken or unhappy homes and underwent serious emotional deprivation during their childhood.[83,85] But many of these same qualities and experiences have been observed in men and women who are not alcoholics, but who may be suffering from bizarre phobias or a wide assortment of mental ailments from mild neuroses to severe psychoses, or who may even be leading reasonably normal lives.

If there is an actual "alcoholic personality"—or a "pre-alcoholic personality"—its specifications are poorly defined and often contradictory, and seem to apply broadly to all mental illness.[89] Knowledge of the role played by psychological factors in alcoholism also awaits further research.

Sociological Factors

Athough intensive research has so far failed to identify a simple chemical, physiological or emotional cause of alcoholism, studies in a different area are now yielding new findings regarded by many scientists as particularly illuminating and potentially practical. Largely in the field of sociology, but also involving physiology, psychology, nutrition, cultural anthro-

pology and epidemiology, these new studies have been aimed at deter.nining why alcoholism is widespread in some national and cultural groups but rare in others.[62 70]

Those with the highest reported rates of alcoholism are classed as high-incidence groups. They include particularly the northern French, the Americans—especially the Irish-Americans (but not the Irish in Ireland)—the Swedes, the Swiss, the Poles and the northern Russians.

By contrast, the relatively low-incidence groups include the Italians, some Chinese groups, Orthodox Jews, Greeks, Portuguese, Spaniards and the southern French.

Differences among some of these cultural groups are reflected in the composition of groups of alcoholics studied in the United States. In one group analyzed in New York City, where available figures indicate that roughly 10 percent of the total population is Irish, 15 percent is Italian, and 25 percent is Jewish, 40 percent of the alcoholics were Irish, 1 percent Italian and none Jewish.[77] In an extensive California study, in an area with large proportions of Irish, Italian and Jewish inhabitants, 21 percent of the alcoholics were Irish, 2 percent Italian and 0.6 percent Jewish.[133]

It does not seem likely that genetics can adequately explain these variations. Various investigators have reported that alcoholism is decreasing among Irish-Americans and Swedish-Americans but rising among second- and third-generation Italian-Americans.[135] Some workers claim that the rate may be rising among Italians in Italy, especially in Rome and other major cities, apparently paralleling the rise in personal income. A slight but distinct rise has been noted among Jews, particularly as they tend to change from Orthodox to Reform attitudes.[124]

Similar studies have shown that the low rates of alcoholism exhibited by some groups cannot all be attributed to abstinence. Most Mormons and Moslems, for example, do not drink because of religious beliefs, and their alcoholism rates are low. But other groups—especially the Italians, Greeks, Chinese and Jews—contain very high percentages of drinkers, and many of them use alcohol abundantly. For example, the per capita alcohol consumption in Italy is rated second only to that in France, but the rate of alcoholism among Italians is relatively low.

In a study published by the American Medical Association in its manual on alcoholism, Dr. Selden D. Bacon of Rutgers University compares two American groups as follows: [5]

For the Orthodox Jews

"The social functions of drinking are strikingly clear. Drinking is is to draw the family together, to cement the bonds of larger group membership, to activate the relationship between man and deity. This is understood by the participants. The rules and procedures of drinking are about as ritualized as those of a university football game or a church service. Violations of the rules, or violations of propriety while drinking, are quickly and severely penalized.

The custom is learned from infancy; it is instilled at the time that basic moral attitudes are learned and is taught by prestigeful members of the group (parents, rabbis, elders). The custom is closely entwined

with family and religious constellations. No great emotional feeling about drinking as such is particularly noticeable; there have never been experiences with prohibition; there are no abstinence movements; there is no Dionysiac cult or worship in drinking. Members of this group sneer at other groups that exhibit drunkenness . . . All members of this society drink, they do so hundreds of times every year, they use beer, wine and distilled spirits . . . Alcoholism is practically unknown."

For the Anglo-Saxon Protestant group

"The social functions of drinking are rather vaguely and somewhat defensively described; they concern drawing people—both family members and also complete strangers—together, often for purposes of 'fun,' often to allow relaxation from (rather than, as in the preceding case, closer adherence to) moral norms. The rules and procedures are on occasion rather specific, but also show enormous variability so that a given individual may follow one set of rules with his family, another with business or professional associates, and a third on holiday occasions, and show even different patterns when away from the home town. Sanctions for violations are extremely irregular, ranging from accepting laughter to violent physical attack . . . The custom is generally learned between the ages of 15 and 20. Sometimes the learning stems not from parents, ministers, physicians, elders, and teachers, but from other adolescents. There is great emotional feeling about the problem on the mass level as well as by individuals. Activating the custom, especially by the young, is often attended with feelings of guilt, hostility, and exhibitionism, and may occur as a secretive practice insofar as parents or employers or elders are concerned . . . Perhaps three-quarters of the males over 15 years of age and perhaps over one-half of the females over 15 years of age use alcoholic beverages, there being not too much use of wine, relatively greater use of beer by men, and use of distilled spirits . . . Alcoholism is not rare in this group. Perhaps 3 to 7 of every 100 users of alcohol are alcoholics."

Dr. Albert Ullman of Tufts University has suggested that the rate of alcoholism is low in those groups in which the drinking customs, values and sanctions are well-established, known to and agreed upon by all, and consistent with the rest of the culture. By contrast, the rate tends to be high in groups with marked ambivalence toward alcohol—with no agreed-upon ground rules. When such conflict exists, with resultant pressures, guilt feelings and uncertainties, the alcoholism rate may be very high.[135] This has been noted among the relatively few Mormons who drink, among moderate drinkers who feel forced to over-indulgence to prove their "manliness," and especially among children of parents with conflicting attitudes —such as a father who sees drinking as a virtue and a mother who feels drinking is a sin.

The full significance of such ambivalent feelings as a cause of alcoholism is yet to be determined. It may be at least hypothesized, however, that they play a significant role.

In general, research has shown that for groups that use alcohol to a significant degree, the lowest incidence of alcoholism is associated with certain habits and attitudes:

1. The children are exposed to alcohol early in life, within a strong family or religious group. Whatever the beverage, it is served in very diluted form and in small quantities, with consequent low blood-alcohol levels.
2. The beverages commonly although not invariably used by the groups are those containing relatively large amounts of non-alcoholic components, which also give low blood-alcohol levels.
3. The beverage is considered mainly as a food and usually consumed with meals, again with consequent low blood-alcohol levels.
4. Parents present a constant example of moderate drinking.
5. No moral importance is attached to drinking. It is considered neither a virtue nor a sin.
6. Drinking is not viewed as a proof of adulthood or virility.
7. Abstinence is socially acceptable. It is no more rude or ungracious to decline a drink than to decline a piece of bread.
8. Excessive drinking or intoxication is not socially acceptable. It is not considered stylish, comical or tolerable.
9. Finally, and perhaps most important, there is wide and usually complete agreement among members of the group on what might be called the ground rules of drinking.

VII. DIAGNOSIS OF ALCOHOLISM

The moderate drinker is easily identified. He drinks only at reasonable intervals, maintaining low blood-alcohol levels. His drinking does not interfere with his health, his family, his work, or his community life. He can readily control his drinking patterns, modifying them to what is appropriate for the time and place. Unlike most problem drinkers, who seemingly drink to relieve tension, the moderate drinker has a wide variety of nutritional, medical, social or religious reasons for his drinking.

The last stages of advanced, full-blown alcoholism are also easily recognized. The victim is usually completely unable to control his drinking; he may no longer have an established family life or be able to hold a job. There may also be malnutrition, cirrhosis of the liver or other tissue damage.

Detecting and diagnosing the borderline states of harmful drinking, however, and doing this at an early stage so that appropriate treatment may be started, is a different and far more difficult task.

Unfortunately, there is no "Wassermann test" or other relatively simple diagnostic procedure for alcoholism. Determining the precise point at which manageable drinking stops and dangerous or addictive drinking begins is as impossible as pinpointing the exact moment when safe driving stops and dangerous driving begins.

The Warning Signs

Individual variation makes it impossible to present a complete list of signs and symptoms uniformly characterizing the early stages of problem drinking. Familiar signs are the need to drink before facing certain situations, frequent drinking sprees, a steady increase in intake, solitary drinking, early morning drinking, Monday morning absenteeism, frequent disputes about drinking, and the occurrence of what are termed black-outs.

For a drinker, a black-out is not "passing out" but a period of time in which, while remaining otherwise fully conscious, he undergoes a loss of memory. He walks, talks and acts, but does not remember. Such black-outs may represent one of the early signs of the more serious form of alcoholism.[75]

But alcoholism may be present without black-outs, and without any of the other popularly accepted symptoms of addictive drinking. Many alcoholics do not go on drinking sprees, or drink alone, or drink in the morning, or miss work on Mondays.

In general, an individual may probably be considered an alcoholic if he continues to drink even though his drinking consistently causes physical illness—headache, gastric distress or hangover—or consistently causes trouble with his wife, his employer, or the police.

Information on the generally accepted characteristics of alcoholics can

usually be obtained from physicians, medical societies, clergymen, social workers, Alcoholics Anonymous, State or local health agencies, and national or local alcoholism organizations. For an individual case, however, proper diagnosis may require the services of an expert. Often it is necessary to await the passage of time to determine whether the individual has failed to heed the signs obvious to others that his drinking is causing significant damage.

The Diagnostic Traps

One of the major obstacles to correct diagnosis is the view of many individuals, both physicians and laymen, that anyone who drinks less than they do is not an alcoholic, or that the only real alcoholic is the Skid Row stereotype. A recent Massachusetts General Hospital study [12] found that a diagnosis of alcoholism was more likely to be made if a patient were poorly clothed, unshaven, separated from his family, unemployed or in trouble with the police. But the correct diagnosis was likely to be missed if the patient were well-groomed, living with his spouse, employed, with no police record, and possessed of health insurance.

In some respects, it appears, the redefinition of alcoholism as a form of illness, a public health and medical problem, has gained more rapid and complete acceptance among the general public and alcoholics themselves than among some members of the medical profession.

In part, the reluctance of some physicians to diagnose alcoholism may be due to a sense of futility and a feeling that they do not have adequate resources or experience to provide needed treatment.

VIII. TREATMENT OF ALCOHOLISM

The alcoholic who needs or seeks help faces at the outset a number of vital questions.

Should he begin his search for help with a relative or a well-meaning family friend? With his family physician, a psychiatrist or a worker from Alcoholics Anonymous? With a clergyman or a social worker? Can he cure himself?

Should he be treated at home, in a sanitarium or in a hospital?

Should he try to taper off gradually or stop all drinking immediately? Should he look to drugs or psychotherapy? Will his treatment require a day, a month, a year or longer? What are his chances of recovery?

Many of the answers will be dictated by his personal prejudices, his fears, his finances and the pressures of his family. Other answers will be influenced subtly but powerfully by community attitudes toward alcohol and the alcoholic. Some may be influenced by knowledge of the new advances in alcoholism therapy—knowledge on his own part, and knowledge on the part of his therapist.

In any effective State or local alcoholism treatment program, it is clearly essential that alcoholics and their relatives—as well as physicians, clergymen, probation officers, personnel workers, social workers and various social agencies—be provided with sound, up-to-date information on the types of treatment available in their own communities, the precise locations where such therapy can be obtained, the probable costs, and the possible results.

Preliminary Treatment

Some alcoholics will begin treatment during a stage of temporary sobriety, others during the throes of a severe hangover or during acute intoxication. For many it will be during the drying-out or withdrawal stage, marked by such conditions as delirium tremens. In some cases of acute intoxication, and in most with severe withdrawal symptoms, competent medical management directed by a physician is essential. Without such care, the patient may die.[57 74]

In the past, treatment of withdrawal symptoms was based largely on such alcohol substitutes as chloral hydrate or paraldehyde. In the last 15 years, these drugs have been replaced in part with new synthetic tranquilizers such as reserpine, chlorpromazine, meprobamate, promazine hydrochloride and chlordiazepoxide. The impact of these tranquilizing drugs on the treatment of the acute alcoholic stage has been described by some clinicians as revolutionary.[14] With appropriate use of tranquilizers and other therapeutic aids, and especially the control of fluid and electrolyte balance, most patients recover promptly from delirium, hallucinations and tremors, and are ready to start other forms of treatment.

Hospital Admission

An acutely ill alcoholic—or the non-alcoholic who is acutely intoxicated —may be given satisfactory care at home, or in a special detoxification or drying-out center, but a general hospital ward is considered the best setting for preliminary treatment. A few American and Canadian general hospitals have long offered such care, but until the late 1950's nearly all hospitals were reluctant to accept alcoholics as patients.

The traditional position of most hospital officials has been attributed to hostile feelings evoked by the so-called typical alcoholic patient, who at admission was often dirty, disheveled, disturbing and demanding. If the patient were boisterous, it was difficult to think of him as sick. Often he was viewed as weak-willed and immoral, offensive to other patients, upsetting to hospital routine, and likely to assault attendants and nurses.

A wealthy or prominent patient might be admitted—often under a camouflaged diagnosis—but only if he paid for a private room and 24-hour-a-day private nursing care. Most patients, unable to afford such care, were sent to the "drunk tank" of the local jail, the psychiatric ward of a State hospital, or the emergency ward of a local hospital. In most emergency wards, attendants concerned themselves primarily with sobering the patient, treating obvious wounds or contusions, and discharging him as quickly as possible. Often, a few days or weeks later, the same patient would reappear for the same type of temporary patching-up.

Probably the most eloquent demonstration that this technique was outmoded and needless came in 1957 at San Francisco's Mount Zion Hospital,[9] after officials decided to accept alcoholics simply as sick people needing hospital care. These patients were placed in regular open wards and treated by physicians, nurses and other personnel who had been carefully trained in the use of new drugs and oriented to treat them as patients who were ill and not necessarily immoral.

It quickly became evident that other patients were not disturbed, hospital routines were not upset, and most of the alcoholics were willing to undertake followup therapy.

"The advent of the tranquilizing drugs has made sedation safer, simpler and more effective, and has greatly facilitated the nursing and medical care of the detoxification and withdrawal period," reported Dr. Jack D. Gordon, the director of the study. "In addition, our increased understanding of the psychological aspects of illness has prompted us to treat alcoholics in a routine, nonpunitive atmosphere with understanding and without discrimination. The alcoholic has responded both to drugs and the atmosphere, and has become manageable."

The experiment demonstrated, first, that modern hospitals can meet their community responsibilities in alcoholism therapy, and second, that hospitalized alcoholic patients usually require no more attention than do patients with diabetes, fractured hips, or coronary attacks.

Although the success at Mount Zion has been duplicated at other hospitals, and leaders of the American Medical Association and the American Hospital Association have urged hospitals throughout the country to follow this lead, many are still unwilling to accept alcoholics as ordinary patients.

The strategic importance of the therapists' attitude during these early phases of treatment has recently been emphasized by the results of a research project undertaken by Dr. Morris E. Chafetz and his associates at Massachusetts General Hospital.[27 28] Studying alcoholic patients admitted to the emergency ward services of the hospital, they found that meeting the patients from the outset with understanding, sympathy, and attention to expressed needs could assure higher rates of follow-through on treatment recommendations.

Drug Therapy

Once over the acute stages of intoxication or withdrawal, the alcoholic starting long-range treatment may require a kind of pharmacological bridge over the difficult early days or weeks. For this, physicians may prescribe a variety of treatments.

Tranquilizers are often used to produce relaxation and to reduce the tensions which many alcoholics believe to have triggered their drinking bouts.[14 56] They are highly effective, but some alcoholics eventually become addicted to the very tranquilizers which helped them break away from their dependency on alcohol.

Other physicians use what is sometimes called conditioned-response or aversion therapy, administering an alcoholic beverage and at the same time a powerful nausea-producing agent like emetine or apomorphine. Repeated treatments with such a combination are intended to develop a conditioned reflex loathing for alcohol in any form. Because of the risk of severe physical reactions, this method of treatment requires close medical supervision.[74]

More widely known and used are so-called deterrent agents such as disulfiram (Antabuse) and citrated calcium carbimide (Temposil). A patient regularly taking one of these compounds finds that ingestion of alcohol in any form quickly produces pounding headache, flushing, and usually violent nausea, vomiting, and other unpleasant symptoms.[43]

Probably the greatest value of these and similar drugs is that they provide real if only temporary relief for many patients. For most patients, however, they can produce lasting benefit only as part of a program of psychotherapy which attempts to get at the emotional factors underlying the drinking of the alcoholic.

Psychotherapy

In the past, alcoholics have been admonished, scolded, denounced, jailed, beaten, ducked, lashed and threatened with eternal damnation. There is no evidence that any of these measures has had significant therapeutic value for more than an occasional alcoholic. Available evidence seems to demonstrate that long-lasting results can be achieved primarily by a technique known generally as psychotherapy.

Broadly, psychotherapy is a label covering various kinds of self-examination, counseling and guidance, in which a trained professional works with (rather than on) a patient—alone or in groups—to help him change his feelings, attitudes and behavior in order to live more effectively.

Although there are variations, the psychotherapeutic approach in the case of alcoholism usually involves an attempt to bring about complete

acceptance of the alcoholic—by himself and by the therapist—as a person who is sick but not evil, immoral or weak, and an equally complete acceptance by the patient of the idea that he needs help. Once some progress has been made, an effort is made to achieve understanding of the patient's underlying tensions as well as his more obvious problems, to alleviate or solve those problems that can be readily handled, and to find a means—other than drinking—which will enable the patient to live with those problems that cannot be solved.

Most successful therapists—however they may differ on details of treatment—indicate that pleadings, exhortations, telling the patient how to live his life, or urging him to use more willpower, are usually useless and may be destructive.[122]

Many therapists stress the frequent need for including members of the patient's family in the therapy program. Research by some investigators has disclosed that the family may include another member who is even more emotionally disturbed than the alcoholic, and who may be partly responsible for the alcoholic's drinking.[57]

Usually patients find that the termination of their excessive drinking means they must face accumulated internal and external problems. Treatment for alcoholics, many therapists hold, cannot be conducted on a hit-or-miss, intermittent basis, or restricted mainly to the management of occasional drinking episodes. Many believe the best schedule calls for very frequent sessions during the first weeks or months, and then sessions at longer intervals as the patient progresses. The patient and his family usually may expect the treatment to continue for at least a year, with the possibility that he may require occasional temporary psychotherapeutic support for many years more.

On the other hand, doctors at the Cleveland Center on Alcoholism [69] have claimed after five years of experience with nearly 2,000 patients that a substantial proportion can be given significant help in from one to five therapeutic sessions. Clearly not advocated for all alcoholics, this short-term psychotherapy was found to be most effective with patients having what were termed reasonably intact emotional and environmental resources—those with good family ties and a determination to get well—and who could, with help, face the reality of their situation quickly.

The Therapist

In the early stages of excessive drinking, many individuals are able to reduce their intake or even stop drinking on their own for periods of time. If they resume drinking and addiction becomes evident, self-treatment is ineffective. Competent professional help is essential, and usually the earlier it is obtained, the better the long-term results. Many types of help are now available.

The Clergy

Traditionally, addictive drinking was considered a sin and its treatment, therefore, a responsibility of the clergy. Until recently, the goal of most religious workers in treating alcoholics was essentially moral reform, to in-

duce the sinner to see the error of his ways and, with Divine aid, to mend them.

This situation has now changed considerably. After deep re-appraisal, many clergymen of various faiths have taken a different approach, utilizing modern psychological and psychiatric knowledge, and are following the pattern of pastoral counseling provided generally for people in trouble.

Alcoholics Anonymous

AA has been described as a loosely knit, voluntary fellowship of alcoholics gathered together for the sole purpose of helping themselves and each other to get sober and stay sober. It has also been pictured as serving its members first as a way back to life and then as a design for living. Widely publicized since the early 1940's, it has more than 7,000 local chapters, with one in almost every sizeable town.

Important to the AA approach is an admission by the alcoholic of his lack of power over alcohol. He must have hit what is termed "rock bottom," finding himself in a desperate and totally intolerable situation. For some this realization may come when they have lost everything and everybody. For others, it may occur when they are first arrested by the police or warned by their employer. At this point, the individual must decide to turn over his life and his will to a power greater than his own. Much of the program has a spiritual but non-sectarian basis.[1]

During the early years of AA, some members rigidly insisted that "only an alcoholic can understand an alcoholic," and there was minimal cooperation between AA workers on the one hand and physicians, clergymen and social workers on the other. With the accumulation of more experience and knowledge, however, most AA members no longer hold these concepts, and cooperation with therapists in other professions has been increasing.

Many physicians emphasize that, valuable and widely accessible as it is, AA should not be considered as a complete form of treatment for all alcoholics, but should be viewed for most as an adjunct to and not a substitute for various forms of professional therapy.[141]

Physicians

If alcoholism is by definition a disease, treatment should logically begin under the direction of a physician. But at least in the past, many physicians have been reluctant to accept alcoholic patients. A 1946 study in New York, for example, showed that 60 percent of 1,609 doctors reporting did not treat alcohol addiction, and alcoholics made up only one percent of the practices of the other 40 percent.[127]

"The situation has improved markedly since then," says Dr. Marvin A. Block, chairman of the American Medical Association's former Committee on Alcoholism, "but it is not improving quickly enough." At least partly responsible, he claims, is the teaching program of most medical schools. "With only a few exceptions, most schools devote less than two hours out of a four-year curriculum to the study of normal and abnormal drinking and the treatment of alcoholics." The students spend far more time learning about rare diseases which they may never encounter in their practice, he says.

In general, the techniques of psychotherapy used in the treatment of alcoholism are no more complex than those used in other conditions, and can be learned and utilized effectively by family physicians, internists and other medical specialists.

Other Specialists

With special training, clinical psychologists and psychiatric social workers in many communities have undertaken responsibility for the long-term care of alcoholics and their families, usually working as members of a therapeutic team. Vocational rehabilitation workers, public welfare caseworkers, visiting nurses, and probation and parole officers have also been trained to help alcoholics, as have many personnel workers in industry, who have often been the first to detect the heavy drinking of employees and start them on the way to treatment.[88]

Special Family Aid

Because the drinking of an alcoholic may seriously affect other members of his family—or be affected by them—increasing attention has been directed toward treatment of the family as a whole. This has sometimes meant the inclusion of the patient's immediate family in the therapy group. One organization, *Al-Anon,* has been established to help the wives and husbands of alcoholics, using techniques similar to those of AA. Another, *Al-Ateen,* is devoted to aiding the children of alcoholics to understand their parents' problems and to develop more effective ways to handle whatever social and emotional difficulties they themselves may be experiencing.

Individual vs. Group Therapy

Some experienced therapists claim that individual treatment on a one-to-one basis is the most successful. Others prefer group therapy, especially when a group of patients is treated simultaneously by a team of therapists.

An outstanding example of the latter approach is the State of Georgia's Georgian Clinic in Atlanta. "Our conviction from the beginning," says Dr. Vernelle Fox, director of the clinic, "was that these patients were sick in mind, body and soul. If they went to a single therapist, they would get one attitude from the psychiatrist, one from the internist and one from the clergyman. We felt we needed a consolidated attitude from all three."

With a staff of specially trained internists, psychiatrists, nurses, social workers, psychologists, vocational rehabilitation counselors, occupational therapists and clergymen of many faiths, the clinic opened in 1953. It now treats voluntary patients from all over the State, either as inpatients, outpatients, day hospital patients, night hospital patients, or some combination of these. If possible, each patient begins therapy by living in the center for from seven to ten days while undergoing an intensive diagnostic and treatment design process. The program has been described as follows: "

> After physical evaluation, the patient undergoes psychiatric, social and vocational screening in an attempt to determine his recovery potential. Medical management and treatment prescription is begun immediately and continued throughout the contact. A series of orientation procedures follows: the patient sees appropriate films, attends personal

interviews and counseling sessions, and participates in group meetings. Each week, there are 69 group meetings, together with 16 staff group meetings. A network of occupational, recreational and vocational activities designed to aid self-expression is woven into the program. The patients themselves form a therapeutic community, earlier members sponsoring the newer and more frightened. This "acceptance attitude therapy" is an important factor in orienting and strengthening the new patient. After leaving the clinic, all patients are urged to attend group meetings regularly for at least two years in the outpatient clinic, or at a local chapter of Alcoholics Anonymous or a community-based clinic, and to continue indefinitely if possible.

In 1964, the Atlanta clinic was capable of treating 237 inpatients a year, at an average cost of about $14.53 a day, each. Together with a smaller clinic at Savannah, it could provide day hospital or outpatient care for about 1,500 patients a year.

Chances of Recovery

In evaluating the future outlook of alcoholics, many therapists divide patients into three broad groups.

1. *The psychotic alcoholics.* These are patients, usually in State mental hospitals, with a severe chronic psychosis. They may account for five to ten percent of all alcoholics.

2. *The Skid Row alcoholics.* These are the impoverished "homeless men" who usually no longer have—or never did have—family ties, jobs, or an accepted place in the community. They may account for three to eight percent.

3. *The "average" alcoholics.* These are men and women who are usually still married and living with their families, still holding a job—often an important one—and still are accepted and reasonably respected members of their community. They account for more than 70 percent of the alcoholics.

From the scanty information available, it would appear that the prognosis for chronic psychotic and Skid Row alcoholics is poor, and that less than 10 to 12 percent can obtain substantial aid from ordinary therapy. For the average alcoholic, the outlook is far more optimistic. Here, three different yardsticks of control have been utilized.

1. *Complete cure.* By strict definition, this would mean that the alcoholic would become able to drink normally or socially, using alcohol moderately and under complete control. Most specialists hold that no alcoholic can ever learn to drink moderately and regard statements to the contrary[9,11,111] as unwise or dangerous.

2. *Permanent abstinence.* For most therapists, the goal of treatment is complete abstinence from alcohol, in any form and under any condition, for the rest of the patient's life. According to available information, only a small percentage—perhaps less than 20 percent of all treated patients—have been able to maintain absolute abstinence for more than three to five years. In certain highly selective industrial and business groups, the rate of abstinence may be as high as 50 percent.[116]

3. *Rehabilitation.* Recently, some leading therapists have been using a different basis of measurement in which success is considered achieved when the patient maintains or re-establishes a good family life, a good work record and a respectable position in the community, and is able to control his drinking *most of the time.*

Depending on the motivation and intelligence of the patient, and his determination to get well; the competence of the therapist; the availability of whatever hospital or clinic facilities, tranquilizers and other drugs which may be needed; and the strong support of family, employer and community —a successful outcome can be expected in at least 60 percent, and some therapists have reported success in 70 or 80 percent.

"It is doubtful that any specific percentage figure has much meaning in itself," says Dr. Selden D. Bacon, director of the Center of Alcohol Studies at Rutgers. "What has a great deal of meaning is the fact that tens of thousands of such cases have shown striking improvement over many years."

There is no evidence that any particular type of therapist—physician, clergyman, AA worker, psychologist or social worker—will achieve better results than another. The chances for a successful outcome apparently depend more on the motivation of the patient and the competence of the therapist than on the type of psychotherapy employed. The earlier that treatment is begun, the better are the prospects for success, although some patients have been treated successfully after many years of excessive drinking.

The Role of Industry

A major factor in successful development of therapeutic resources is strong support from the employer, first in helping to detect alcoholism in its early stages and then in cooperating in treatment.

More than 200 American firms maintain their own company programs, usually as part of the company's industrial health or industrial relations services. All rely upon resources in the community for a major part of the treatment aspects of the programs.

Alcoholic employees whose drinking problems have been identified are, generally, offered treatment at an earlier stage of the disease than are unemployed drinkers. This may mean that chances for successful recovery are enhanced: physical health has deteriorated less; financial resources have not been so completely depleted; strong emotional supports exist in the family and the community; and strong motivation for recovery may be provided by threatened job loss. All of these factors presumably contribute to the 50–70 percent recovery rate generally reported for industry.[8 82 118] Costs to industry for control programs are generally conceded to be negligible in relation to the savings.

The Role of Health Insurance

Paralleling the increasing interest of industry in alcoholism has been a change in the attitude of insurance companies. While most companies once declined to include the treatment of alcoholism in health insurance policies, many now provide some kind of coverage.

The degree of coverage currently varies in different areas and for differ-

ent insured groups, some providing coverage only for the acute phase and others covering only long-term treatment. Treatment is usually covered by State disability insurance programs and by many commercial insurance companies, with a wide variation in the protection provided by union plans, Blue Shield and Blue Cross.

The Role of Local Agencies

Numerous agencies on the city or county level—private, governmental and religious—have contributed to the treatment of alcoholics and the care of their families. Among the oldest of these are the Salvation Army, the Volunteers of America, and various church-sponsored missions, which have often provided help and leadership in areas where no other assistance has been available. Although their programs primarily provide spiritual support, some are now incorporating the services of psychologists, psychiatrists, and internists.

Special hospitals for alcoholics, some sponsored by State or other governmental agencies, but most privately operated, accommodate relatively few patients, but many have served as important research and training centers.

Halfway houses have become well-known during the past ten years, serving as intermediate stations for patients whose rehabilitation apparently requires gradual rather than abrupt return to the community.

The Role of State and Federal Agencies

Traditionally, most State and Federal expenditures for alcoholism—along with similar expenditures by some cities and counties—have been applied for welfare. To aid the wives, husbands and children of alcoholics, State and Federal agencies, working together, provide some individual aid to children of alcoholic parents, homemaker service and day care for children, guidance to adolescents, re-education for rehabilitation, training of specialized personnel and the organization of demonstration projects in public welfare.

In the actual treatment of the alcoholic patients themselves, government officials are faced with the necessity of solving two related problems—first, the provision of suitable hospital facilities where needed for the short-term treatment of the acute stages of intoxication; and second, the provision of facilities for long-term inpatient and outpatient care.

Most workers expect the eventual solution of the first problem will be routine acceptance of alcoholics by all general hospitals, and the training of necessary personnel. This, however, would be of limited value unless it were linked with a full-scale, long-term treatment program for the underlying alcoholism. For long-term treatment, some experts have proposed State networks of outpatient clinics—such as one full-time, completely staffed center for every 200,000 inhabitants, with mobile teams of workers providing part-time services in adjoining communities. Interest has also been shown in night hospitals where employed alcoholics can get rehabilitative care during the evenings and day hospitals for mothers who can be treated while their husbands are at work and their children in school.

Although many State-supported clinics are already in operation, they

probably represent only a stop-gap solution. Many thoughtful people—physicians and non-physicians alike—are convinced that the eventual, practical answer to the problem of alcoholism therapy lies not in supporting hundreds or thousands of special clinics, but in training and motivating doctors and other therapists to accept the responsibility for treating alcoholism as routinely and unemotionally as they would any other disease.

IX. PREVENTION OF ALCOHOLISM

While early casefinding and treatment of alcoholics is essential, this approach will obviously not solve alcoholism as a community health problem. For most diseases, as in the case of smallpox, typhoid fever, pellagra, scurvy and poliomyelitis, substantial control depends on effective prevention.

In the past, the prevention of alcoholism was based primarily on efforts to prevent or at least minimize drinking. Since alcoholism itself was deemed largely a problem of moral weakness or immoral willfulness, the early prophylactic actions were chiefly punitive, threatening or exhortative, and represented mostly by legal or religious measures.

Legal Approaches: National

The most complete prevention of excessive drinking would be provided by the most complete prevention of all drinking, such as by the enactment and full enforcement of laws against the production, distribution, sale or consumption of alcohol in any form. This has been attempted many times in various parts of the world—most recently in Finland and the U.S.—and the penalties for violation have ranged from fine and imprisonment to banishment or death. Except perhaps for some Moslem areas, these attempted legislative controls have not proved adequate, and in spite of many sincere and determined efforts, no country in Europe or the Americas has yet succeeded in eliminating the use of alcohol by legislative means.

Some experts believe the rate of excessive drinking and of alcoholism in Sweden may have decreased slightly during the 1960's and suggest that this may be due in part to taxation policies which make beer and wine markedly less expensive than distilled spirits on the basis of equivalent alcohol content.

Legal Approaches: Regional

Before the Prohibition period in the United States and many times after it, legal control of drinking was attempted by various States, counties and cities. In some instances, these local laws were aimed at the establishment of "dry States" or "dry counties." In others, the laws dictated the number of liquor stores which would be permitted, the hours and conditions of their operations, the prices they could charge, and the age of their customers. Some States set up a monopoly system under which the State itself operated liquor stores, while others permitted such stores to be operated under State license. The effects and relative advantages of these laws have been the subject of brisk controversy.

A survey conducted in 1963 by a Moreland Act Commission for the State of New York found no consistent relationship between excessive drinking—as measured by drunk-driving arrests, public intoxication arrests, admissions to mental hospitals, or reported alcoholism rates—and sales of alcoholic

beverages through State monopoly or private liquor stores. Similarly, no apparent relationship was found between excessive drinking and the number of liquor stores in a given area. The investigators concluded that, in general, there was no evidence that the various legal control systems employed in the United States bore any relationship to the extent or nature of alcohol use, or to the nature or extent of alcohol problems. An exception was the finding that most arrests for illegal delivery occurred in those jurisdictions with the most rigid control of distribution, no bars, and very few package stores.[104]

More study is needed, however, before the effects of these and similar measures can be definitely established.

Legal Approaches: The Young Drinkers

Minimum age laws in the United States make it illegal to sell alcoholic beverages to persons under the age of 18 in some States, and under the age of 21 in others. In some States, minors can drink legally—in some instances at 16 or younger—provided they drink at home, or provided they drink in the presence of their parents, or with parental consent, or provided they are married.[65]

There is considerable evidence to show that these regulations have not been and perhaps cannot be satisfactorily enforced, and frequently may contribute to disrespect for the law.[65] As was mentioned above, the average age for the first experience in drinking is reported to be 14.

Available evidence from studies in the United States and other countries would indicate that the legal minimum drinking age *in itself* may not be of great importance. Thus, there is no minimum drinking age either in Italy, which has one of the lowest reported rates of excessive drinking in Europe, or in France, which has one of the highest.

Further light on the effect of restrictive laws has come from the investigations by Drs. Robert Straus and Selden Bacon [120] on the drinking patterns of college students, as noted in Chapter III. In colleges having formal prohibitions against drinking, relatively few students drink, these investigators found. But at such "dry" schools, those students who do drink tend to drink more frequently and more heavily, and are more often involved in drinking-related incidental problems than are students of colleges with a more liberal attitude toward drinking.

As a student observed at a college where drinking is prohibited, "If you have to drive fifty miles to get a drink, you don't take just one drink."

From such evidence, it appears that the theory of prohibition may sound reasonable but it is destined to failure. It is doomed by the realities of manufacture and distribution. In one form or another, alcohol can be easily produced by any farmer, by any high-school chemistry student, or by any informed citizen. It is unrealistic to expect that alcohol can be removed from use by society simply by legislative fiat.

Religious Approaches

Just as no legal technique has yet succeeded in preventing alcoholism, religious leaders themselves are among the first to observe that alcoholism

has not yet been successfully prevented—at least in Judeo-Christian cultures—solely by religious approaches.[59 65 126]

The attitude of the various religious groups is clear on one point: all are strongly opposed to *excessive* drinking. Their attitudes toward drinking *in moderation,* however, vary markedly between denominations, and have changed visibly over the past three or four centuries. Some faiths—notably the Catholic and Jewish—have always approved, accepted or at least tolerated the controlled use of alcoholic beverages. Some have endorsed the use of certain beverages but not of others. Several Christian denominations—especially since the early 1700's—have vigorously opposed the use of alcohol in any form.[65]

The National Council of the Churches of Christ, while recognizing that not all its member churches think alike on the matter of drinking, has suggested that the prevention of alcoholism may be related to other social problems, and calls for an attack on these other problems by strengthening family life; providing mental health clinics, family service agencies, and pastoral counseling programs; and by removing such degrading social conditions as bad housing, disease, poverty, inadequate education, and poor recreational and health facilities.

Education: Against Alcohol

Starting with Vermont, in 1882, every State in the United States has enacted legislation making "alcohol education" compulsory in the public schools. Since the beginning of this program, temperance leaders have taken an active role in having the laws adopted and in supplying teaching materials to the schools.[41] In general, teaching programs have centered on such concepts as these: alcohol is a poison, a narcotic, and a threat to health and society; any alcoholic beverage is harmful; drinking is immoral; the only solution is complete abstinence.[80 134 135]

Nevertheless, increasing percentages of students exposed to these versions of alcohol education during the past three-quarters of a century have grown up to become adults who drink—mostly in moderation. Similarly, this traditional education has not eradicated excessive drinking.

One reason proposed to account for these failures has been the excessive emphasis placed on so-called scare techniques.[125] Many educators have emphasized the difficulties or disasters involved in attempting to teach one set of standards to children who have already learned a different set—consciously or unconsciously—from their own parents, many of whom use alcohol without any apparent damage to themselves, and who do not appear to their children as evil or immoral.[125 135]

Some educators have asserted that factual material on alcohol may be logically presented in the classroom, but opinions on whether drinking is socially desirable or morally reprehensible should be left to individual families and their teaching. Some believe that children should be given facts, induced to discuss pro and con arguments, and then make their decisions on the basis of information which is learned in the school, and in the home, together with what is taught by their particular religious faith.[99]

According to many educators, the traditional educational approach has failed because it has been excessively concerned with alcoholism, rather

than with the broad subject of drinking. One authority, Dr. Robert Straus, says, "It is as if the driver-education classes in schools would be concerned only with gorier aspects of speeding and reckless driving. This might frighten a few students, but it would not produce many who know how to handle an automobile safely. With the emphasis placed solely on alcoholism, alcohol education might similarly frighten a few students, but it would not produce many who know about drinking, or how to handle alcohol safely."

Education: For Safe Drinking

The concept of educating individuals to drink safely or not at all is scarcely new. It is patterned in large part on safety concepts applicable to driving and other activities, and is inherent in the habits and attitudes of those cultural groups which have demonstrated over many centuries an ability to use alcoholic beverages with only a minimum of danger. Implicit is the idea that young people are given whatever education possible—in school, in church and particularly at home—to enable them to understand that just as it is not necessary for anyone to drive, it is not essential for him to drink; but if he does drive or does drink, he should know how to do so with maximum safety for himself and others.

In any such education, it has been stressed, the teaching goals should be the development, as early in childhood as possible, of attitudes conducive to healthy and happy living. To drink or to abstain is a cultural pattern which, like most folkways, reflects the family setting and may be developed by the time the child is ten years old.[107]

Among the most important principles to be considered are these:

1. *It is not essential to drink.* An individual—youth or adult—who decides to abstain from alcohol for moral, medical, economic or any other reasons, should not be placed under pressure to drink by other members of his society.

2. *Excessive drinking does not indicate adult status, virility or masculinity.* In an adult society, one can no more establish his manhood by his ability to hold a large amount of liquor than by his ability to hold a large amount of dessert.

3. *Uncontrolled drinking or alcoholism is an illness.* Children, including the children of alcoholic parents, should be aware that alcoholism is not a perversity, not necessarily a character defect, and not even the direct result of drinking. They should know that an alcoholic, like a victim of diabetes or tuberculosis, is a sick person who can and should be helped.

4. *Safe drinking depends on specific physiological as well as psycho-social factors.* These factors include (a) early development of healthy attitudes toward drinking, within a strong family environment, (b) prevention of dangerous blood-alcohol levels by restricting beverage consumption to small amounts, in appropriate dilution, and preferably in combination with food, (c) recognition that drinking is dangerous when used in an effort to solve emotional problems, and (d) universal agreement that intoxication will not be sanctioned by the group.

Most effective is to engender a public attitude that drinking to the point of intoxication is socially unacceptable.

"We should make it clear to families, so that they can convey the message to their children," says Dr. Giorgio Lolli of New York, "that without drinking to excess, without inebriety, there is no alcoholism . . ."

5. *An understanding that "alcohol education" should not be restricted to "alcoholism education."* Instead, education on alcoholism and excessive drinking should be considered as only one phase of education on eating and drinking, and should preferably be included as part of education on nutrition and mental health.

To many workers in this field, the major objective is the enhancement of mental health in families and individuals, and the development of suitable safe mechanisms whereby these families and individuals can solve their emotional tensions and anxieties.

X. CURRENT ACTIVITIES: SURVEYS AND SERVICES

Although their activities have not yet represented any massive, all-out attack against the problems of excessive drinking, the present operations of many private and governmental agencies at least suggest the roles which these agencies might play in the future.

Survey of the Problem

To assess the nature of the alcoholism problem and the resources now available to control it, the National Institute of Mental Health has supported the work of the Cooperative Commission of the Study of Alcoholism, established in cooperation with the North American Association of Alcoholism Programs. With its professional staff at the Institute for the Study of Human Problems at Stanford University, the Cooperative Commission had the following objectives: (1) a study of the scientific knowledge now available both on moderate drinking and on alcoholism; (2) an inventory, study and evaluation of programs and resources now available for the control of alcoholism; (3) an investigation of relationships between the various public and private organizations which are now concerned with alcoholism control; (4) the preparation of recommendations for improving education, treatment and prevention; and (5) general suggestions for needed research.

In another NIMH-supported study, conducted in cooperation with the Division of Alcoholic Rehabilitation, California Department of Public Health, investigators have begun to measure the rate at which new cases of alcoholism appear annually in selected population groups. While heavy drinking precedes development of alcoholism, not all heavy drinkers become alcoholics. Research is underway to find out how many do become alcoholics, and to determine those factors that may indicate which of the heavy drinkers will become addicted.

In the pilot California study, a scientific sampling technique was developed and used in interviewing more than 1,000 subjects in the San Francisco area during 1962.[87] Most of these individuals were interviewed again in 1963 and 1964 in an attempt to measure changes in drinking habits. Meanwhile, a related study using the methods developed in California is being conducted by scientists at George Washington University, in Washington, D.C., and is aimed at a survey of approximately 3,000 subjects at about 100 sampling points throughout the United States.[30]

Another investigation, intended to measure not the changes in the number of alcoholics but their prevalence—the number per 1,000 population—has been carried on with NIMH support in the Washington Heights Health District of the City of New York.[9] In the test area, nearly 1,000 families were queried about health problems, including those related to intoxication, and also about job and money problems, family arguments and

violence, marital break-ups, neighborhood troubles and "difficulties with the law" which might be connected with excessive drinking. The preliminary data have indicated an overall alcoholism prevalence rate of 19 per 1,000, with a ratio of 3.6 men to 1 woman.

In still other projects, many of them supported by State or Federal funds, similar surveys are being conducted on the drinking patterns of teenagers, Negroes, and Indians, Spanish-Americans, and Anglo-Americans in the Southwest; and, in Sweden, the drinking patterns of alcoholics, normal drinkers, and former drinkers who have become abstainers.

Previous research on the drinking patterns of various cultural groups, both in this country and abroad, has revealed cultural characteristics which seem to be significantly related to either safe or dangerous drinking practices. It is expected that further investigations in this field will increase knowledge of the prevalence of alcoholism within specific cultural groups, and also add to the understanding of some of the causative or protective factors involved.

Treatment and Rehabilitation Facilities

Reduction of the problem of excessive drinking must come about primarily from increased prevention. The serious situation of those who are now alcoholics, however, cannot be ignored.

To date, the treatment of such drinkers has been largely the responsibility of individual therapists—physicians, clergymen, AA workers, social workers and others—using State hospitals, clinics and other facilities. Federal support has provided technical assistance and consultation in program development, the planning of comprehensive mental health programs, the mobilization of community personnel and facilities, the development of new and improved community health services, and the construction and staffing of community mental health centers.

In certain instances, the Federal Government has taken an active role in the demonstration and testing of new techniques of treatment. For example, as a demonstration project in cooperation with the county health department, NIMH has helped to initiate a county-wide alcoholism program in Prince Georges County, Maryland, an urban-suburban-rural area adjacent to Washington, D.C. Designed as a public health approach to the problems of alcohol, the project is aimed at: (1) developing a comprehensive program to rehabilitate the alcoholic as well as his family, utilizing combined community facilities; (2) developing educational activities to reduce the stigma of alcoholism, stimulate early diagnosis and treatment, and contribute to the prevention of the disease; and (3) incorporating measuring devices into the program to determine the efficacy of particular techniques.[22]

At Saint Elizabeths Hospital, operated by the Federal Government in Washington, D.C., a new unit has been established to provide a coordinated treatment and rehabilitation program for alcoholics, utilizing group therapy, vocational training and other techniques for both short- and long-term treatment.

Another NIMH-supported demonstration project is located at Malcolm Bliss Mental Health Center in St. Louis, Missouri, where a community-

centered treatment program is being developed for alcoholics, starting with inpatient treatment in the hospital and extending through systematic referral to cooperating agencies in the community. Attempts are being made to determine which patients can be most effectively rehabilitated through hospital inpatient and outpatient services, and which should be referred to other community agencies.

Typical of somewhat similar activities in a number of States, the Georgian Clinic in Atlanta is utilizing State support to provide both inpatient and outpatient service for alcoholics, and Federal support for demonstrating and testing night-treatment facilities for alcoholic patients who are able to work during the day.

As part of its activities in providing financial aid and professional leadership in rehabilitating patients with all types of mental or physical disability, the Vocational Rehabilitation Administration supports vocational counseling as part of the treatment of alcoholics. The Welfare Administration, working through State and local welfare departments, is able to provide public assistance payment for families of alcoholics who are unable to support their children, or who desert them. Some individuals, disabled because of their addictive drinking, are qualified to receive aid provided for the permanently and totally disabled. Medical care programs help indigent alcoholics and their families, while social welfare services are available to help the alcoholics and especially their spouses and children.

Many alcoholics have been aided through these and similar government-supported treatment and rehabilitation programs. But the number of patients requiring this kind of help has been estimated to be in the millions.

Community Mental Health Centers

The treatment and control of alcoholism has a major relationship to mental health services. As community mental health centers develop their services to provide a continuity of care for individual patients, treatment of alcoholics will be included within the range of their comprehensive programs.

Some mental health centers will be organized to treat alcoholics and other patients in a totally integrated program. Others may provide partially integrated services for all patients, while providing additional services adapted to the special needs of alcoholics. A third operational plan would provide a totally differentiated service program for alcoholics within the center.

The degree to which a mental health center can help to solve a community's alcoholism problem will be determined to a large extent by the amount of public support the center receives. Thus, as the centers are established, it will be their goal—in addition to treatment of patients—to inform and educate the citizenry and secure strong community support for the treatment of alcoholics and their families.

Technical Training

Typical of training activities for professional workers is a three-year demonstration project supported by NIMH at the Nebraska Psychiatric Institute, Omaha, and aimed at demonstrating new ways of providing special

psychiatric training for general practitioners. Thirteen small-town family doctors traveled to the Institute at monthly intervals for a series of 24 training sessions. In the first year after training, they used their own offices as outpatient facilities in the treatment of 159 alcoholics—some referred by wives, husbands or other relatives, and some coming on their own initiative to seek help—as part of regular family medical care.

Significantly, the specially trained family physicians soon found they were called upon to speak to their medical societies and other groups on new developments in the treatment of alcoholism. Of at least equal significance, a follow-up study showed that the special training invested in these physicians had long-term benefits: the treatment of alcoholics remained an accepted part of their routine medical practice.

With both State and Federal support, a variety of related training programs has been instituted in Missouri—a project for family doctors and other health personnel at Washington University, St. Louis; a treatment center serving as a model for rural public health workers; and an inservice training project which has aided in developing effective working relationships among therapists, police officials and court personnel. Similar support in other States has provided for the training of general practitioners, psychiatrists, medical residents, nurses, social workers, psychiatric aides and chaplains. One such project in Atlanta has made possible a training program not only for medical residents from local hospitals but also for graduate ministerial interns.

Included in the training activities have been two- or three-day workshops or conferences to aid in postgraduate studies, and week-long training institutes sponsored at colleges and universities.

Of particular value is a project supported by NIMH at the Center of Alcohol Studies, at Rutgers, to bring some order to the currently confused —and confusing—terminology in the field of alcohol, drinking and alcoholism. Another is preparation of an American Public Health Association guide for the public health control of alcoholism.

Training programs also are sponsored by the Welfare Administration, the Vocational Rehabilitation Administration and the Office of Education. Thus far, all these various programs have provided valuable specialized training to many hundreds of health workers. Thousands more, however, must be trained to staff programs for the prevention and control of alcoholism.

Community Education and Organization

Only a start has been made in improving the communication to the general public of available knowledge on alcohol, drinking and alcoholism, and the organization and the mobilization of local facilities are only beginning. In the developments which have occurred thus far, an important role has been played by many voluntary organizations such as the Rutgers Center of Alcohol Studies, the National Council on Alcoholism and various local Councils and mental health associations, as well as by governmental agencies, which have helped to provide information and stimulate public action during the past two decades.

Some possibilities for future activities are already apparent. For example,

an NIMH-supported project at Mississippi State University is directed toward school administrators, classroom teachers, students, parents, religious leaders, law enforcement officers, city officials, public health personnel and hospital administrators. It is intended to explore the possibilities, limitations, problems and values of a comprehensive alcohol education program —to find who does not want alcohol education, and why not, and who does want such education, why and what kind.

At Western Reserve University, in Cleveland, another project is directed toward community education, community information, and community organization, involving internists, psychiatrists, clinical psychologists, social workers, nurses and clergymen.

In the Michigan Upper Peninsula, a large rural area in which only limited resources have been available for the treatment of alcoholics, the Alcoholism Program, Department of Public Health, is engaged in an NIMH-supported project to have alcoholism accepted by local communities as a treatable illness and to stimulate the utilization of local resources for its treatment.

Similar projects, some with State support and some with Federal support, have been instituted in scores of other cities and other local areas. The number of communities in which such programs are urgently required, however, is estimated to number in the thousands.

61

XI. CURRENT ACTIVITIES: LABORATORY AND CLINICAL RESEARCH

In the future, it may well be that the greatest impact will come not from expansion of present services but from basic and applied research.

During the past several years, support for such research has already been given by various parts of the Federal, State and local governments, and by voluntary organizations and industry, including the American Heart Association, the Board of Christian Social Concerns of the Methodist Church, the Ford Foundation, the Nutrition Foundation, the Christopher D. Smithers Foundation, and the United Health Foundation. It has also been given by the Licensed Beverage Industries, the United States Brewers Association, and the Wine Advisory Board, an agency of the California State Department of Agriculture.

Among the cooperating institutions, perhaps the largest, oldest and most influential is the Center of Alcohol Studies, located at Yale University from 1940 to 1962, and since then at Rutgers University. It has been a center of research, education, postgraduate training, demonstration, documentation and publication, and its *Quarterly Journal of Studies on Alcohol* is regarded as the most authoritative in the world. Starting with laboratory studies on the physiology and metabolism of alcohol, the Center's workers have pioneered in objective research on drinking, on traffic safety, and on alcoholism.

Examples of some current investigations are indicated in the following sections.

Effects of Alcohol

Essential for an understanding of the actions of alcohol in excessive drinkers is further knowledge of its effects in moderate drinkers. Accordingly, scores of investigations are being conducted with private or government support on the metabolism of alcohol, its actions on enzymes, tissues and organs, and its behavioral effects in human subjects and in animals. Much of this new research has been made possible by the utilization of biochemical, pharmacological and electro-physiological techniques and insights which were unavailable ten or fifteen years ago.

Some studies, for example, indicate that the effects of alcohol are not necessarily related simply to the alcohol concentration in the blood. For instance, scientists at the Karolinska Institute in Stockholm have suggested that skilled performance may be impaired at a certain level when the blood-alcohol curve is rising, but there may be no impairment at the very same level when the blood-alcohol curve is falling.[50] An individual may thus be judged intoxicated at a given blood-alcohol level when the curve

is going up, but sober at the same level when the curve is going down. In the same field, research in the International Center for Psychodietetics has indicated that identical blood-alcohol levels in the same individual can be associated with remarkably different psychomotor performances, depending on whether the individual consumed the alcoholic beverage with or without meals.[76]

At Boston City Hospital and other centers, investigators have observed that some alcoholics brought to the emergency room in a state of coma—usually after the ingestion of large amounts of alcohol—may not have particularly high blood-alcohol levels but do have extremely low blood-sugar levels. A similar result has been produced in normal volunteers who have ingested large amounts of alcohol on an empty stomach. Apparently, the investigators conclude, a large dose of alcohol taken by an individual who has been fasting for 24 hours or more can produce a rapid, dramatic drop in blood-sugar concentrations and, in fact, can cause the so-called hypoglycemic coma similar to that produced by large doses of insulin. The alcohol, it seems, prevents the liver from manufacturing and releasing sugar into the bloodstream in the normal way, and the normal homeostatic mechanisms which protect the body from low blood-sugar levels—even during periods of starvation—stop functioning.[45]

In another study conducted on human subjects under an NIMH project at the University of California at Los Angeles, it has been found that alcohol increases the abundance of alpha-waves in the brain as measured by the electroencephalograph, with a tendency toward the production of slower rhythms in the alpha range. The effect, which is related to the amount of alcohol ingested, may reflect the sedative or tranquilizing properties of alcohol.[34]

From these and many other investigations, it is obvious that much more research must be done before the pharmacological effects of alcohol upon behavior in animals and in man are adequately understood, in terms of either the primary effects of alcohol on the central nervous system itself or the secondary effects of alcohol upon behavior.

Physiological Factors in Alcoholism

Another large body of research is concerned not directly with the pharmacology of alcohol itself, or the effects of alcohol on normal subjects, but with the actions of alcohol in alcoholics and with any chemical, endocrinological, neurological, and other physiological differences which may exist between normal drinkers and alcoholics.[91]

During the past few years, such investigations have been performed on nerve conduction and the functioning of the sympathetic nervous system in alcoholics, their amino acid and vitamin balance, and the activity of various enzyme and hormone systems.

Particular attention has been paid to the rate at which alcoholics metabolize alcohol in different forms and under different conditions. Several investigations have revealed, for example, that alcoholics may metabolize alcohol somewhat faster—about 10 or 20 percent more rapidly—after prolonged alcohol ingestion. Such an observation has resulted in the suggestion that

continued ingestion of alcohol might lead to an increased production of the enzymes necessary to metabolize alcohol. Confirmation of this belief has come from a recent study supported by NIMH at Massachusetts General Hospital, where investigators found under controlled conditions that consumption of relatively large amounts of alcohol for a 14-day period will give an increased rate of alcohol metabolism in both alcoholics and normal subjects.[93]

Under these conditions, it was observed, both groups also showed an increased production of cortisone, the adrenal hormone already known to increase enzyme activity in other biological systems. It therefore appears that continued drinking—in either normal subjects or alcoholics—leads to increased cortisone output, which in turn leads to increased activity of the enzymes which metabolize alcohol.[92]

From the Massachusetts General Hospital study, it was also learned that those subjects who manifested the greatest increase in cortisone production during the heavy drinking period were those who also demonstrated the greatest increase in the rate of alcohol metabolism. In general, the alcoholics showed a much greater cortisone response during the drinking period than did the normal drinkers. Even when the drinking period was terminated, the alcoholics continued to increase their cortisone production.

In the alcoholics, it was felt, this cortisone production seemed to be part of a general reaction to alcohol consumption. It was associated with increased anxiety during the drinking period, and perhaps with the later withdrawal symptoms.

In the normal drinkers, elevations in cortisone production seemed to be associated primarily with gastric upsets and stomach irritation caused by the excessive drinking. These subjects did not show the general, sustained increase in cortisone production observed in the alcoholics, and they did not manifest severe withdrawal symptoms when alcohol administration was stopped.

Alcoholism in Experimental Animals

For more than a decade, much effort has been expended to produce, preferably by simple procedures, alcoholism in an animal—a laboratory version of the human disease which might greatly facilitate research on causes, treatment and prevention. These attempts have not been successful.

Government-supported research at the University of California, the Scripps Clinic Research Foundation in La Jolla, California, and the University of North Carolina has led to the discovery of inbred strains of mice which demonstrate a selective preference for alcohol and drink it in large amounts. This preference is genetically determined, and is not affected even when the young mice of these strains are raised by mothers of a different strain, or exposed to various conditions of stress or isolation. The mice of these heavy-drinking strains, however, also happen to be able to metabolize alcohol much more rapidly than are mice of other strains; accordingly, it is impossible to determine whether their increased alcohol intake is related to a particular desire or to their ability to consume more alcohol without becoming intoxicated.[115]

Another study has indicated that an apparent desire can be induced in rats by first injecting minute quantities of an alcohol solution directly into their brains, every two or three hours for several days, through a specially implanted cannula or tube. Thereafter, it was found, the rats will take alcohol by mouth whenever it is offered to them.[98]

Until the last few years, little work in this field had been done on the common rhesus monkey. Now preliminary NIMH-supported investigations indicate that it may be a particularly useful laboratory animal for alcohol research.

At Massachusetts General Hospital, for example, a study has shown that a rhesus monkey can develop a pattern of heavy drinking when exposed to periodic stress for prolonged periods. In this case, the investigators found, the monkey may continue the heavy drinking pattern after the stress is terminated—a situation which may resemble that in which a hard-driving individual drinks first to relieve stress, and then develops a drinking pattern which continues even without stress.[90]

At the University of Michigan, other investigators have studied rhesus monkeys with an apparatus which the animal can use to give himself an injection of a drug through a permanently-connected intravenous catheter. With such a device, it had already been found that monkeys will learn to self-administer such agents as barbiturates, cocaine, morphine, and amphetamine.[139] These techniques are currently being used to study self-administration of alcohol in monkeys.

"The rhesus monkey may yet provide an animal experimental model of human alcoholism," it has been stated by Dr. Jonathan Cole of the National Institute of Mental Health. "However, investigators may be faced, as they are in man, with identifying the differences between monkeys who like large quantities of alcohol and monkeys who are teetotalers or only occasional indulgers."

Research on Therapeutic Methods

Of most immediate practical value are research projects on different aspects of alcoholism treatment. Some of these are concerned with studies of the management of patients in the offices of private practitioners, halfway houses, clinics and hospitals. Others are directed toward the development of new and more useful therapeutic drugs.

In these investigations on therapeutic methods, it has been emphasized that there are a number of different clinical states which must be attacked. These include: (1) acute alcohol intoxication or severe drunkenness, (2) alcohol withdrawal symptoms short of delirium tremens, (3) delirium tremens itself, (4) other psychiatric conditions associated with alcoholism, such as alcoholic hallucinosis, and (5) the long-term problem of addiction.

In the past, failure to consider these conditions separately has resulted in much confusion in the analysis of therapeutic reports.

In the treatment of *acute alcohol intoxication,* research has thus far failed to yield any pharmacological agents with significant value. Various tranquilizing drugs have been tested, but the evidence of their usefulness is generally inconclusive.

In the treatment of *withdrawal symptoms short of delirium tremens,* many investigations have indicated that such tranquilizers as promazine, chlordiazepoxide and diazepam may be valuable. Such drugs can apparently serve to reduce the tremulousness, anxiety, sleeplessness, nausea and general discomfort which mark this condition. But it has not been established that they are substantially superior to older sedative agents such as paraldehyde and chloral hydrate.[32]

Here, a major problem has been finding a suitable technique for measuring the value of the various treatments. Some investigators have sought to use the degree of tremor or shaking as an indication of the severity of the condition. Others have attempted to use clinical ratings of anxiety, tension, discomfort and insomnia, or subjective self-reports from the patients themselves. No technique has so far been found widely acceptable.

In the case of *delirium tremens,* a serious and sometimes fatal condition, tranquilizers have also been described as highly effective but there is no adequate evidence that any of these agents is markedly superior to paraldehyde. Other studies have shown that intensive nursing care, and proper control of the patient's food intake and his electrolyte balance, may be even more important than drug therapy in preventing death. Earlier reports suggesting that administration of cortisone or ACTH could shorten the course of delirium tremens have not been confirmed.

The cause or mechanism of delirium tremens remains poorly understood. From work done several years ago at the Addiction Research Center, U.S. Public Health Service Hospital, in Lexington, Kentucky, and a recent NIMH-supported investigation at Massachusetts General Hospital, it appears clear that the phenomenon of delirium tremens is not simply a direct toxic effect of alcohol on the brain. In fact, it usually occurs after alcohol withdrawal—in individuals who have been consuming large amounts of alcohol steadily for many days or weeks, and who then stop drinking.

Even less understood is the phenomenon of *alcoholic hallucinosis*—a more chronic condition than delirium tremens, usually marked by auditory hallucinations but without the disorientation and panic seen in delirium tremens.

In the *long-term treatment* of alcoholics, once they have gone through the acute withdrawal stage, drug therapy has not proved to be of marked value. At the University of California at Los Angeles, trials have shown that tranquilizers are usually little better than placebos in their long-term effects.[32]

During the past few years, clinical research interest has been expressed in several totally different pharmacological approaches to the treatment of alcoholism. One of these involves the use of lysergic acid diethylamide (LSD 25), which induces strange and occasionally mystical sensations and experiences. Some patients reportedly emerge from such experiences with greater insight into their problems and considerably enhanced motivation to abstain from alcohol.[121] The findings appear to be highly controversial, and the durabiilty of desired changes in attitude is yet to be determined. Further studies of these reactions are being undertaken with NIMH support.

The foregoing examples, it must be emphasized, do not comprise a complete survey of all research and service projects on alcohol, drinking and alcoholism now underway. They serve only to illustrate some of the major topics which are currently under scientific investigation. They represent only a beginning.

Some of the major objectives yet to be achieved are indicated in the following chapter.

XII. FUTURE NEEDS

In alcoholism, as in the case of such diseases as cancer, schizophrenia and even many types of asthma, the fact that the cause is unknown or poorly understood does not mean that medicine is powerless to help the patient.

As noted in earlier chapters, experienced therapists believe that methods already known and tested in the treatment of alcoholism could provide substantial help now for many hundreds of thousands of patients. The full-scale application of these techniques, and the development of better ones require the mobilization of many community resources.

Application of Present Knowledge

For the preliminary treatment of alcoholics in the acute stage of intoxication or in delirium tremens, it has been demonstrated that care in the general wards of general hospitals can be safe, economical and effective. Many hospitals, however, are still reluctant to accept such patients. Physicians therefore have recommended these objectives:

- Alcoholic patients should be admitted as their clinical needs indicate by all general hospitals.
- All hospitals should be equipped with whatever modern drugs and other facilities are needed for the treatment of patients who are intoxicated or suffering from delirium tremens.
- Suitable advance training and orientation in the care of alcoholics should be provided for staff physicians, nurses, attendants and administrative personnel.

These are primary needs, hospital and medical leaders have stated. Hospitals will meet this responsibility when it is required of them by the community.

For long-term psychotherapy and rehabilitation, treatment in the hands of physicians, AA workers, clergymen, psychologists, psychiatric social workers and other professional personnel—working alone or in teams—has been shown to be effective. Here these needs have been indicated:

- The requirement for mental health centers, clinics, long-term inpatient care and outpatient facilities in each area should be determined and essential facilities provided by private and governmental agencies for followup and long-term rehabilitation care, and special night hospitals, day hospitals and halfway houses for temporary inpatient care.
- Training in the treatment of alcoholics, now offered by only a few medical schools, should be taught routinely by all medical schools.
- Appropriate education should be provided for clergymen, public

health workers, social workers, teachers, psychologists, nurses and nursing aides.

- Special courses should be made available for physicians and other professional personnel already in practice, as well as for lawyers, judges, police officials, AA workers and others who may be working with alcoholics.
- Appropriate textbooks, pamphlets, audio-visual materials and other teaching aids, based on objective knowledge must be prepared.
- For such teaching purposes, as well as for general communication in this area, at least a tentative working agreement must be reached on vocabulary and terminology.
- Intensive, controlled studies on the various types of treatment now being used should be conducted to measure their relative efficacy, and determine the types of patients for which each is most suitable.
- Employers, personnel experts, social workers, marriage counselors, law enforcement officers, and other key individuals should be trained to detect early signs of possible alcoholism so they can recommend appropriate referrals.
- Further efforts are needed to improve both communication and cooperation among professional and lay groups interested in alcoholism, and within such groups.
- Control of excessive drinking must be included in community health program planning, and fragmented health services must be consolidated.

Here, too, the public has a major interest. Such activities may be costly, but they will cost the taxpayers less than attempting to salvage the damage stemming from uncontrolled alcoholism.

Search for New Knowledge

To develop better techniques for treatment and for prevention, these urgent needs must be met:

- More effective drugs are required for the treatment of intoxication and delirium tremens.
- Effective drugs or other therapeutic aids must be developed for the safe, rapid alleviation of hangover, if only to break the drinking cycle of many alcoholics who renew their alcohol ingestion as a self-treatment for hangover symptoms.
- Better and non-addicting drugs should be developed for the relief of emotional tension and for possible use as temporary or long-term substitutes for alcohol.
- In order to speed the development of such agents, and the study of the disease in general, it is essential to find a simple method of reproducing alcoholism in experimental animals.
- Further studies are needed on the effects of alcoholic beverages (and not merely alcohol) on the brain and other organs.
- A further search should be made for any chemical, physiological, hormonal, metabolic or other basic constitutional difference which

may exist between alcoholics and normal drinkers, and which may account for addictive drinking.

- More information should be obtained on the effects of specific foods —carbohydrates, fats and proteins—in protecting against dangerously high blood-alcohol levels.
- Long-term studies must be made on large numbers of human subjects, beginning early in life and continuing for many years, to determine the chemical, psychological, sociological or cultural factors which might be related to the development of alcoholism.
- Better techniques should be developed for one-to-one and group therapy.

For basic research aimed at prevention of alcoholism, and capitalizing on the discovery that some cultural groups seem to have a built-in protection, the following are required:

- Nationwide epidemiological research is needed to describe and measure the problem; to replace present vague estimates and impressions with statistically significant, up-to-date information on the drinking patterns of Americans; on the numbers and characteristics of moderate drinkers and of alcoholics; on the actual size and costs of such problems as alcoholism in industry, drunk-driving and excessive juvenile drinking; and on any changes which may occur as the result of control efforts.
- Reliable methods are needed to measure the numbers of alcoholics in specific geographical areas, vocations, races, age groups, and other socio-economic classifications.
- More detailed studies are needed on the major low-incidence and high-incidence cultural groups, to determine differences which may be significant as protective factors.
- Analysis is needed on attitudes associated with dangerous drinking on the one hand and with safe drinking on the other; and development of methods of influencing or modifying such attitudes among children and adults. Considerable research must be focused on changing or improving the attitudes of parents toward drinking so that they will wisely guide their children's experience with alcohol.

XIII. THE NATIONAL PROGRAM

Traditionally, major governmental responsibility for the control of alcoholism has been assumed by the States and local communities, usually through their mental health or public health programs. On such activities, during the early 1960's, these agencies spent between roughly $15 and $20 million a year. Various Federal agencies provided some collaborative assistance in these control programs, and furnished support for a limited amount of research.

Beginning in 1966, the Federal Government joined in a full partnership with State and local organizations, public and private, to develop a unified, coordinated program of control and prevention based on a new national policy in which the gravity of the problem was fully recognized.

The Presidential Directive

In March 1966, in his Health Message to the Congress, President Lyndon B. Johnson called for the start of the new program. He said:

> The alcoholic suffers from a disease which will yield eventually to scientific research and adequate treatment. Even with the present limited state of our knowledge, much can be done to reduce the untold suffering and uncounted waste caused by this affliction. I have instructed the Secretary of Health, Education, and Welfare to appoint an Advisory Committee on Alcoholism; establish in the Public Health Service a center for research on the cause, prevention, control and treatment of alcoholism; develop an education program in order to foster public understanding based on scientific fact; and work with public and private agencies on the State and local level to include this disease in comprehensive health programs.

The Health, Education, and Welfare Program

The President's directive speeded planning which had already been underway within the Department of Health, Education, and Welfare. The expanded program was organized during the next few months, and formally announced in October 1966. Centered in the Department of HEW, it has set two main goals to be attacked simultaneously. One is immediate: to make available the best treatment and rehabilitative services to those who need them now, through the mobilization of existing resources and the production of additional health manpower and health facilities. The second is long-range: to develop effective, practical and acceptable methods of preventing alcoholism and excessive drinking in all their destructive forms, and to develop improved therapeutic techniques.

In order to achieve these objectives, a broad departmental policy was enunciated by John W. Gardner, Secretary of HEW, to highlight these points:

- Improved coordination of the alcoholism activities of the Department's constituent agencies.
- Fostering of closer relationships, improved communications, and other collaboration between the Department and non-Federal groups interested in alcoholism.
- Creation of a national action policy based upon an awareness that alcoholism is a treatable and preventable disease.
- Development of broad-based, multidisciplined, integrated intramural and extramural programs of basic and applied alcohol research and demonstration.
- Development of a program of education based on sound, scientific facts for the health professions and the public on drinking and alcoholism.
- Development of means to enable States and local communities to utilize effectively both existing and new private, public and voluntary agency resources in the development of comprehensive services—medical, social welfare, vocational rehabilitation and other therapeutic, preventive and supporting measures—to meet the needs of alcoholics and their families.

Intragovernmental Coordination

To improve coordination within the Department of HEW, an internal committee—established originally in 1964—began intensifying its operations early in the spring of 1966. In this group are representatives of the Department's major operating agencies—the Public Health Service, including especially the National Institute of Mental Health; the Office of Education; the Vocational Rehabilitation Administration; the Welfare Administration, including the Children's Bureau; the Social Security Administration; the Food and Drug Administration; and Saint Elizabeths Hospital.

Chairman of the internal committee is the Assistant Secretary for Health and Scientific Affairs.

By the summer of 1966, informal liaison was established between this committee and representatives of the Veterans Administration, the Civil Service Commission, the Department of Commerce, the Department of Defense, the Department of Justice, the Department of Labor, and other branches of the Government which were likewise deeply concerned with one or more aspects of alcoholism control.

National Coordination

To improve coordination between governmental and nongovernmental agencies, a National Advisory Committee on Alcoholism was appointed by the Secretary to give advice and guidance on broad long-range policies, help speed the dissemination of information quickly and accurately between all major interested groups in the field, and prevent needless duplication or overlapping of efforts.

Included on the committee are 18 representatives of medicine, social work, labor, industry, vocational rehabilitation, education, hospital groups, the law, the clergy, and voluntary agencies.

National Action Policy

To mobilize existing resources and existing knowledge for the care of those already afflicted with alcoholism, the policy enunciated by the Secretary called for a number of steps based on sound medical and socio-economic principles.

Among the recommendations were these:

- Hospitals, clinics, nursing homes, and medical centers should be encouraged to admit and treat alcoholic patients routinely as their medical needs indicate.
- Physicians and other health workers should be encouraged to accept, treat and counsel alcoholic patients within the limits of their professional competence.
- Within the framework of their respective functions and responsibilities, health, education and welfare agencies—public and private—should be stimulated and encouraged to provide necessary services to cope with the problems of alcoholism.
- Public and private insurance carriers should be encouraged to include the treatment of alcoholism in health insurance policies.

In addition, the DHEW policy statement called upon the Federal Government to take a responsible position for those of its own employees who might be alcoholics.

- The Federal Government, as a major employer, should recognize alcoholism as a medical problem which may seriously concern some of its employees and therefore itself; (it) should include its prevention, control and treatment in employee health programs; and (it) should, therefore, recognize alcoholism as a justification for disability retirement.

Research

In accordance with the President's directive, the new National Center for Prevention and Control of Alcoholism has been established in the National Institute of Mental Health, now a major bureau of the Public Health Service.

In addition to carrying other responsibilities, the Center is serving as the focal point in the Public Health Service for basic and applied research, training, demonstrations and technical assistance to non-Federal agencies. Some of the investigations supported through Federal financing are intramural, conducted within the Center or other sectors of the Department of HEW, while others are extramural, carried on in universities, medical schools, hospitals, clinics, and other appropriate research centers, by means of research grants or research contracts.

Additional research and demonstration programs are being supported by the Office of Education, the Vocational Rehabilitation Administration, the Welfare Administration, the Food and Drug Administration, and Saint Elizabeths Hospital. Close liaison has been established to coordinate these programs with special research and demonstration projects supported by other governmental agencies.

Education

To provide objective, unemotional, accurate information on drinking, and on alcoholism, key roles have been assigned to the Office of Education, the Public Health Service, and the Children's Bureau of the Welfare Administration for the preparation of appropriate and coordinated educational programs for the general public, and especially for school-age children, college students and their parents.

Similarly, these agencies and the Vocational Rehabilitation Administration have been assigned responsibility for the development of coordinated programs for the training of health workers—including physicians, nurses, rehabilitation counselors, social workers, hospital technicians, and clergymen—to enable them to provide needed services in this field.

The production of informational material by the Department is being coordinated with the work of major non-governmental organizations which are engaged in preparing similar materials.

Delivery of Services

Recent legislation has made it possible for several of the Department's agencies—notably the Welfare Administration, the Vocational Rehabilitation Administration, and the Public Health Service—to aid State and local agencies in providing needed care to alcoholics and their families.

In the case of the Welfare Administration, programs are being developed in cooperation with State and local welfare agencies to help maintain family incomes, furnish social welfare services, and provide payment for medical care and community organization activities for alcoholics and their families.

Under the new Medical Assistance provisions (Title XIX) of the Social Security Act, necessary medical care can be financed in certain States for those alcoholics who can be classified as medically indigent. Ordinarily, under this legislation, treatment in a mental hospital is not covered.

In the Vocational Rehabilitation Administration, increased funds are being assigned for the provision and expansion of services by State rehabilitation agencies, the development and introduction of new rehabilitation techniques for alcoholics, the construction of rehabilitation facilities, and the support of workshops.

In the case of the Public Health Service, major interest has been focused on the new Comprehensive Health Planning and Public Health Services Amendments of 1966, which are believed to represent the best vehicle for the rapid development of adequate care of alcoholics. Under this legislation, comprehensive grants can be provided to each State to bring health programs in line with the existing health needs of that State. In those States and communities in which alcoholism is recognized as a major public health problem, these comprehensive grants would offer the greatest opportunity for efficiently coordinated Federal and State action.

Other recent Federal legislation makes it possible to provide financial support for training professional and nonprofessional health workers to treat alcoholism, and for constructing necessary hospital, clinic, and community mental health facilities.

In describing the new program, the Department of HEW has emphasized

the pressing need for coordination of all research, treatment, prevention, training, education and rehabilitation activities.

- No matter how much money is appropriated, there will never be enough to provide all the services and support all the research which we might like. There will never be enough skilled manpower to excuse needless duplication or needless overlapping.
- It is vital, therefore, that there be coordination of all alcoholism activities within the Department. It is equally vital that Federal activities be coordinated with those in States and local communities, with those in hospitals, clinics, research centers, and teaching institutions, and with those of the voluntary agencies. It is vital that American work be coordinated with that abroad. It is vital that the developments in all these centers be communicated as rapidly, accurately and effectively as possible to health workers, to educators, to government officials at every level, and to the public.
- What we are thus creating is a new and challenging partnership which will cross rigid departmental, regional and even national boundaries. It must also cross the equally rigid and sometimes more restricting boundaries between the various professional and academic disciplines . . . If ever a partnership were needed to solve a major public health problem, it is needed here in the attack against alcoholism.

This new partnership has now been created. The needed manpower, the physical facilities, the techniques for delivery of services, and the financial support are being mobilized.

The first big step has been taken.

75

BIBLIOGRAPHY

1. Alcoholics Anonymous: *Alcoholics Anonymous,* Alcoholics Anonymous Publ., New York, 1955.

2. American Medical Association: Report of Reference Committee on Medical Education and Hospitals, J.A.M.A. 162:82 (1956).

3. American Medical Association: *A Manual on Alcoholism,* Amer. Med. Assn., Chicago, 1962.

4. Andréasson, Rune, and Bonnichsen, Roger: *Persons Influenced by Alcohol in Road Traffic,* Preliminary Report, Stockholm, 1964.

5. Bacon, Selden D.: Social Settings Conducive to Alcoholism, in American Medical Association: *A Manual on Alcoholism.*

6. Bailey, Margaret B.; Haberman, Paul W.; and Sheinberg, Jill: Identifying Alcoholics in Population Surveys; A Report on Reliability, Quart. J. Stud. Alcohol 27:300 (1966).

7. Bales, Robert F.: Attitudes Toward Drinking in the Irish Culture, in Pittman and Snyder: *Society, Culture, and Drinking Patterns.*

8. Bell, R. Gordon: The Role of Alcohol in Community Life, in *Community Factors in Alcohol Education,* Montpelier, Vt., 1962.

9. Berke, Mark; Gordon, Jack D.; Levy, Robert I.; and Perrow, Charles B.: *A Study on the Nonsegregated Hospitalization of Alcoholic Patients in a General Hospital,* Hospital Monograph Series No. 7, Amer. Hosp. Assn., Chicago, 1959.

10. Bjerver, Kjell, and Goldberg, Leonard: Effect of Alcohol Ingestion on Driving Ability, Quart. J. Stud. Alcohol 11:1 (1950).

11. Blacker, Edward; Demone, Harold W., Jr.; and Freeman, Howard E.: Drinking Behavior of Delinquent Boys, Quart. J. Stud. Alcohol 26:223 (1965).

12. Blane, Howard T.; Overton, Willis F., Jr.; and Chafetz, Morris E.: Social Factors in the Diagnosis of Alcoholism. I. Characteristics of the Patient, Quart. J. Stud. Alcohol 24:640 (1963).

13. Bleuler, Manfred: Familial and Personal Background of Chronic Alcoholics, in Diethelm, Oskar: *Etiology of Chronic Alcoholism,* Thomas, Springfield, Ill., 1955.

14. Block, Marvin A.: Medical Treatment of Alcoholism, in American Medical Association: *A Manual on Alcoholism.*

15. Block, Marvin A.: *Alcoholism. Its Facets and Phases,* John Day, New York, 1966.

16. Blum, Richard H. and Eva M.: Drinking Practices and Controls in Rural Greece, Brit. J. Addict. 60:93 (1964).

17. Bogue, Donald J.: *Skid Row in American Cities,* University of Chicago Press, Chicago, 1963.

18. Borkenstein, Robert F.: Handling the Drinking Driver, in *Alcohol and Road Traffic,* Brit. Med. Assn., London, 1963.

19. Borkenstein, Robert F.; Crowther, Richard F.; Shumate, Robert P.; Ziel, Walter B.; and Zylman, Richard: *The Role of the Drinking Driver in Traffic Accidents,* Indiana University, Department of Police Administration, Bloomington, Ind., 1964.

20. Borkenstein, Robert F.; Trubitt, Hillard J.; and Lease, Richard J.: Problems of Enforcement and Prosecution, in Fox, Bernard H. and James H. (eds.): *Alcohol and Traffic Safety,* U.S. Public Health Service Publication No. 1043, 1963.

21. Brayton, Robert G.; Stokes, Peter; and Louria, Donald B.: Paper presented before American Federation for Clinical Research, New York, Dec. 1964.

22. Brown, Bertram S.; Esquibel, Augusto; Grant, Murray; and Pickford, Edward M.: Health Department Alcoholism Program in Prince Georges County, Md., Public Health Rep. 77:480 (1962).

23. Cain, Arthur H.: *The Cured Alcoholic,* John Day, New York, 1964.

24. California State Department of Public Health, Division of Alcoholic Rehabilitation: *Criminal Offenders and Drinking Involvement. Part II,* California State Department of Public Health, 1964.

25. Chafetz, Morris E.: Practical and Theoretical Considerations in the Psychotherapy of Alcoholism, Quart. J. Stud. Alcohol 20:281 (1959).

26. Chafetz, Morris E.: Alcoholism Problems and Programs in Czechoslovakia, Poland and the Soviet Union, New England J. Med. 265:68 (1961).

27. Chafetz, Morris E.; Blane, Howard T.; Abram, Harry S.; Golner, Joseph; Lacy, Elizabeth; McCourt, William F.; Clark, Eleanor; and Meyers, William: Establishing Treatment Relations with Alcoholics, J. Nerv. & Ment. Dis. 134:395 (1962).

28. Chafetz, Morris E.; Blane, Howard T.; Abram, Harry S.; Clark, Eleanor; Golner, Joseph H.; Hastie, Elizabeth Lacy; and McCourt, William F.: Establishing Treatment Relations with Alcoholics: A Supplementary Report, J. Nerv. & Ment. Dis. 138:390 (1964).

29. Chafetz, Morris E.; Demone, Harold W., Jr.; and Solomon, Harry C.: Alcoholism: Its Cause and Prevention, New York J. Med. 62:1614 (1962).

30. Cisin, Ira H.: Paper presented before American Association for the Advancement of Science, Washington, D.C., Dec. 1966.

31. Davies, D. L.: Normal Drinking in Recovered Alcohol Addicts, Quart. J. Stud. Alcohol 23:94 (1962).

32. Ditman, Keith S.: Review and Evaluation of Current Drug Therapies in Alcoholism, Psychosomatic Med. 28:667 (1966).

33. Dock, William: The Clinical Value of Alcohol, in Lucia: *Alcohol and Civilization.*

34. Docter, Richard F.; Naitoh, Paul; and Smith, James C.: Electroencephalographic Changes and Vigilance Behavior During Experimentally Induced Intoxication with Alcoholic Subjects, Psychosomatic Med. 28:605 (1966).

35. Drew, George C.: Alcohol and Skilled Behavior, in Lucia: *Alcohol and Civilization.*

36. *Driver* v. *Hinnant,* 243 F. Supp. 95 (E.D. No. Car., 1965); rev. 356 F. 2d 761 (C.A. 4, 1966).

37. *Easter* v. *District of Columbia,* (D.C. App., 1966) 209 A 2d 625; rev. 361 F. 2d 50 (C.A. D.C., 1966).

38. Efron, Vera, and Keller, Mark: *Selected Statistical Tables on the Consumption of Alcohol, 1850–1962, and on Alcoholism, 1930–1960,* Rutgers Center of Alcohol Studies, New Brunswick, N. J., 1963.

39. Engleman, Ephraim P.: Alcoholic Beverages and Gout, Bull. Soc. M. Friends Wine 3:5 (Feb. 1961).

40. Ewalt, Jack: Statement of Welcome, in *Mental Health Aspects of Alcohol Education,* U.S. Public Health Service, 1958.

41. Ferrier, W. Kenneth: Alcohol Education in the Public School Curriculum, in McCarthy: *Alcohol Education for Classroom and Community.*

42. Forsander, Olof A.: Influence of Alcohol on the General Metabolism of the Body, in Lucia: *Alcohol and Civilization.*

43. Fox, Ruth: Antabuse as an Adjunct to Psychotherapy in Alcoholism, New York J. Med. 58:1540 (1958).

44. Fox, Vernelle, and Smith, Marguerite A.: Evaluation of a Chemopsychotherapeutic Program for the Rehabilitation of Alcoholics, Quart. J. Stud. Alcohol 20:767 (1959).

45. Freinkel, Norbert, and Arky, Ronald A.: Effects of Alcohol on Carbohydrate Metabolism in Man, Psychosomatic Med. 28:551 (1966).

46. Glad, Donald D.: Attitudes and Experiences of American-Jewish and American-Irish Male Youth as Related to Differences in Adult Rates of Inebriety, Quart. J. Stud. Alcohol 8:406 (1947).

47. Goldberg, Leonard: Quantitative Studies on Alcohol Tolerance in Man, Acta physiol. Scandinav. 5 (suppl. 16):1 (1943).

48. Goldberg, Leonard: Alcohol, Tranquilizers and Hangover, Quart. J. Stud. Alcohol (suppl. 1):37 (1961).

49. Goldberg, Leonard: The Metabolism of Alcohol, in Lucia: *Alcohol and Civilization.*

50. Goldberg, Leonard: Paper presented before International Symposium on Alcohol and Alcoholism, Santiago, Chile, Aug. 1966.

51. Greenberg, Leon A.: Alcohol and Emotional Behavior, in Lucia: *Alcohol and Civilization.*

52. Gusfield, Joseph R.: Status Conflicts and the Changing Ideologies of the American Temperance Movement, in Pittman and Snyder: *Society, Culture, and Drinking Patterns.*

53. Haggard, Howard W.; Greenberg, Leon A.; and Lolli, Giorgio: The Absorption of Alcohol with Special Reference to Its Influence on the Concentration of Alcohol Appearing in the Blood, Quart. J. Stud. Alcohol 1:684 (1941).

54. Henderson, Ralph M., and Bacon, Selden D.: Problem Drinking: The Yale Plan for Business and Industry, Quart. J. Stud. Alcohol 14:247 (1953).

55. Hoff, Ebbe Curtis: The Etiology of Alcoholism, Quart. J. Stud. Alcohol (suppl. 1):57 (1961).

56. Hoff, Ebbe Curtis: The Use of Pharmacological Adjuncts in the Psychotherapy of Alcoholics, Quart. J. Stud. Alcohol (suppl. 1):138 (1961).

57. Hoff, Ebbe Curtis: Comprehensive Rehabilitation Program for Alcoholics, Arch. Environm. Health 7:460 (1963).

58. Isselbacher, Kurt J., and Greenberger, Norton J.: Metabolic Effects of Alcohol on the Liver, New England J. Med. 270:351, 402 (1964).

59. Jackson, Douglas: *Stumbling Block,* Board of Missions of the Methodist Church, New York, 1960.

60. Jellinek, E. M.: Heredity of the Alcoholic, in Yale University Center of Alcohol Studies: *Alcohol, Science, and Society,* Quart. J. Stud. Alcohol, New Haven, Conn., 1954.

61. Jellinek, E. M.: Estimating the Prevalence of Alcoholism: Modified Values in the Jellinek Formula and an Alternative Approach, Quart. J. Stud. Alcohol 20:261 (1959).

62. Jellinek, E. M.: Cited in *Alcoholism and Drug Addiction Research Foundation,* Toronto, Twelfth Annual Report, Appendix II:82 (1962).

63. Kalant, Harold: Some Recent Physiological and Biochemical Investigations on Alcohol and Alcoholism, Quart. J. Stud. Alcohol 23:52 (1962).

64. Keller, Mark: Alcoholism: Nature and Extent of the Problem, in *Understanding Alcoholism,* Ann. Am. Acad. Polit. Soc. Sc. 315:1 (1958).

65. Kelly, Norbert L.: Social and Legal Programs of Control in the United States, in McCarthy: *Alcohol Education for Classroom and Community.*

66. Kleeman, Charles R.; Rubini, Milton E.; Lamdin, Ezra; and Epstein, Franklin H.: Studies on Alcohol Diuresis. II. The Evaluation of Ethyl Alcohol as an Inhibitor of the Neurohypophysis, J. Clin. Invest. 34:448 (1955).

67. Knupfer, Genevieve, and Room, Robin: Age, Sex, and Social Class as Factors in Amount of Drinking in a Metropolitan Community, Social Problems 12:224 (1964).

68. Krantz, John C., Jr., and Carr, C. Jelleff: *The Pharmacologic Principles of Medical Practice* (6th ed.), Williams & Wilkins, Baltimore, 1965.

69. Krimmel, Herman E., and Falkey, D. Bruce: Short-Term Treatment of Alcoholics, Social Work 7:102 (1962).

70. Leake, Chauncey D., and Silverman, Milton: *Alcoholic Beverages in Clinical Medicine,* Year Book Medical Publishers, Chicago, 1966.

71. Lieber, Charles S., and Davidson, Charles S.: Some Metabolic Effects of Ethyl Alcohol, Am. J. M. Sci. 33:319 (1962).

72. Liebmann, A. J., and Scherl, Bernice: Changes in Whisky While Maturing, Ind. Eng. Chem. 41:534 (1949).

73. Locke, Ben Z., and Duvall, Henrietta J.: Alcoholism Among First Admissions to Ohio Public Mental Hospitals, Quart. J. Stud. Alcohol 25:521 (1964).

74. Lolli, Giorgio: Alcoholism, 1941–51; A Survey of Activities in Research, Education and Therapy. V. The Treatment of Alcohol Addiction, Quart. J. Stud. Alcohol 13:461 (1952).

75. Lolli, Giorgio: *Social Drinking,* World Publishing, Cleveland, 1960.

76. Lolli, Giorgio, and Meschieri, Luigi: Mental and Physical Efficiency after Wine and Ethanol Solutions Ingested on an Empty and on a Full Stomach, Quart. J. Stud. Alcohol 25:535 (1964).

77. Lolli, Giorgio; Schesler, Esther; and Golder, Grace M.: Choice of Alcoholic Beverage among 105 Alcoholics in New York, Quart. J. Stud. Alcohol 21:475 (1960).

78. Lolli, Giorgio; Serianni, Emidio; Golder, Grace M.; and Luzzatto-Fegiz, Pierpaolo: *Alcohol in Italian Culture,* Rutgers Center of Alcohol Studies, New Brunswick, N.J., 1958. (*)

79. Lucia, Salvatore Pablo (ed.): *Alcohol and Civilization,* McGraw-Hill, New York, 1963.

80. McCarthy, Raymond G.: Where and How do we Teach Alcohol Education, in *Mental Health Aspects of Alcohol Education,* U.S. Public Health Service, 1958.

81. McCarthy, Raymond G. (ed.): *Alcohol Education for Classroom and Community,* McGraw-Hill, New York, 1964.

82. McCarthy, Raymond G.: The Fellowship of Alcoholics Anonymous: Alcoholism in Industry, in McCarthy: *Alcohol Education for Classroom and Community.*

83. McCord, William and Joan: *Origins of Alcoholism,* Stanford University Press, Stanford, Calif., 1960.

84. McNamara, John H.: The Disease Conception of Alcoholism: Its Therapeutic Value for the Alcoholic and His Wife, Social Casework 41:460 (1960).

85. Maddox, George L.: Childhood and Alcohol: Some Roots of Pathological Drinking Behavior, in *Community Factors in Alcohol Education,* Montpelier, Vt., 1962.

86. Maddox, George L.: Teenage Drinking in the United States, in Pittman and Snyder: *Society, Culture, and Drinking Patterns.*

87. Maddox, George L., and McCall, Bevode C.: *Drinking Among Teen-Agers,* Rutgers Center of Alcohol Studies, New Brunswick, N.J., 1964.

88. Mann, Marty: *New Primer on Alcoholism,* Rinehart, New York, 1958.

89. Masserman, Jules H.: Alcohol and Neurotic Behavior, in Lucia: *Alcohol and Civilization.*

90. Mello, Nancy K., and Mendelson, Jack H.: Factors Affecting Alcohol Consumption in Primates, Psychosomatic Med. 28: 529 (1966).

91. Mendelson, Jack, and La Dou, Joseph: Experimentally Induced Chronic Intoxication and Withdrawal in Alcoholics. Part 2. Psychophysiological Findings, Quart. J. Stud. Alcohol (suppl. 2): 14 (1964).

92. Mendelson, Jack H., and Stein, Stefan: Serum Cortisol Levels in Alcoholic and Nonalcoholic Subjects During Experimentally Induced Ethanol Intoxication, Psychosomatic Med. 28:616 (1966).

93. Mendelson, Jack H.; Stein, Stefan; and McGuire, Michael T.: Comparative Psychophysiological Studies of Alcoholic and Nonalcoholic Subjects Undergoing Experimentally Induced Ethanol Intoxication, Psychosomatic Med. 28:1 (1966).

94. Menninger, Karl A.: *Man Against Himself,* Harcourt, Brace, New York, 1938.

95. Mulford, Harold A.: Drinking and Deviant Drinking, U.S.A., 1963, Quart. J. Stud. Alcohol 25:634 (1964).

96. Mulford, Harold A., and Miller, Donald E.: Measuring Public Acceptance of the Alcoholic as a Sick Person. Quart. J. Stud. Alcohol 25:314 (1964).

97. Murtagh, John M.: Alcohol and the Law, in Lucia: *Alcohol and Civilization.*

98. Myers, Robert D.: Voluntary Alcohol Consumption in Animals: Peripheral and Intracerebral Factors, Psychosomatic Med. 28:484 (1966).

99. National Safety Council: *Accident Facts,* National Safety Council, Chicago, 1966.

100. Neilsen, Royal A.: *Alcohol Involvement in Fatal Accidents in Eight Large California Counties in 1962,* California Traffic Safety Foundation, San Francisco, 1963.

101. Neilsen, Royal A.: *A View of Chemical Tests for California,* California Traffic Safety Foundation, San Francisco, 1963.

102. Newman, Henry, and Abramson, Mason: Absorption of Various Alcoholic Beverages, Science 96:43 (1942).

103. Newman, Henry W., and Abramson, Mason: Some Factors Influencing the Intoxicating Effect of Alcoholic Beverages, Quart. J. Stud. Alcohol 3:351 (1942).

104. New York State Moreland Commission on the Alcoholic Beverage Control Law: *The Relationship of the Alcoholic Beverage Control Law and the Problems of Alcohol,* Study Paper No. 1, New York, 1963.

105. Parreiras, Deció; Lolli, Giorgio; and Golder, Grace M.: Choice of Alcoholic Beverage among 500 Alcoholics in Brazil, Quart. J. Stud. Alcohol 17:629 (1956).

106. Partanen, Juha; Bruun, Kettil; and Markkanen, Touko: *Inheritance of Drinking Behavior,* Finnish Foundation for Alcohol Studies, Helsinki, 1966.

107. Pasciutti, John J.: Introduction, in *Community Factors in Alcohol Education,* Montpelier, Vt., 1961.

108. Pearl, Arthur; Buechley, Robert; and Lipscomb, Wendell R.: Cirrhosis Mortality in Three Large Cities: Implications for Alcoholism and Intercity Comparisons, in Pittman and Snyder: *Society, Culture, and Drinking Patterns.*

109. Pearl, Raymond: *Alcohol and Longevity,* Knopf, New York, 1926.

110. Pearl, Raymond: The Search for Longevity, Sci. Monthly 46:462 (1938).

111. Pfeffer, Arnold Z.: *Alcoholism,* Grune & Stratton, New York, 1958.

112. Pittman, David J., and Gordon, Wayne C.: *Revolving Door. A Study of the Chronic Police Case Inebriate,* Rutgers Center of Alcohol Studies, New Brunswick, N.J., 1958. (*)

113. Pittman, David J., and Snyder, Charles R. (eds.): *Society, Culture, and Drinking Patterns,* Wiley, New York, 1962.

114. Presnall, Lewis F.: Cited in Business Week, Sept. 21, 1963.

115. Rodgers, David A.: Factors Underlying Differences in Alcohol Preference Among Inbred Strains of Mice, Psychosomatic Med. 28:498 (1966).

116. Roe, Anne: Children of Alcoholic Parents Raised in Foster Homes, in Yale University Center of Alcohol Studies: *Alcohol, Science, and Society,* Quart. J. Stud. Alcohol, New Haven, Conn., 1954.

117. Roueché, Berton: *The Neutral Spirit: A Portrait of Alcohol,* Little, Brown, Boston, 1960.

118. Rouse, Kenneth A.: *What to do About the Employee with a Drinking Problem,* Kemper Insurance Group, Chicago, 1964.

119. Sadoun, Roland; Lolli, Giorgio; and Silverman, Milton: *Drinking in French Culture,* Rutgers Center of Alcohol Studies, New Brunswick, N.J., 1965.

120. Seeley, John R.: Alcoholism Prevalence: An Alternative Estimation Method, Quart. J. Stud. Alcohol 21:500 (1960).

121. Smart, Reginald G., and Storm, Thomas: The Efficacy of LSD in the Treatment of Alcoholism, Quart. J. Stud. Alcohol 25:333 (1964).

122. Smith, Jackson A.: Psychiatric Treatment of the Alcoholic, J.A.M.A. 163:734 (1957).

123. Snyder, Benson R.: Some Implications of Alcohol Education for Teachers, in *Mental Health Aspects of Alcohol Education,* U.S. Public Health Service, 1958.

124. Snyder, Charles R.: *Alcohol and the Jews,* Rutgers Center of Alcohol Studies, New Brunswick, N.J., 1958. (*)

125. Sower, Christopher: Teen-Age Drinking and the School, in *Mental Health Aspects of Alcohol Education,* U.S. Public Health Service, 1958.

126. Spalding, Willard B.: Cited in McCarthy, Raymond G.: *Teen-agers and Alcohol,* Rutgers Center of Alcohol Studies, New Brunswick, N.J., 1956. (*)

127. Straus, Robert: Medical Practice and the Alcoholic, Ann. Am. Acad. Polit. Soc. Sc. 315:117 (1958).

128. Straus, Robert: To Drink or Not to Drink, in Lucia: *Alcohol and Civilization.*

129. Straus, Robert, and Bacon, Selden D.: *Drinking in College,* Yale University Press, New Haven, Conn., 1953.

130. Straus, Robert, and McCarthy, Raymond G.: Nonaddictive Pathological Drinking Patterns of Homeless Men, Quart. J. Stud. Alcohol 12:601 (1951).

131. Strauss, Maurice B.: The Etiology of "Alcoholic" Polyneuritis, Am. J. M. Sc. 189:378 (1935).

132. Swedish Temperance Education Board: *The Alcohol Question in Sweden,* Swedish Temperance Education Board (Centralförbundet för Nykterhetsundervisning), Stockholm, 1960.

133. Terry, James; Lolli, Giorgio; and Golder, Grace: Choice of Alcoholic Beverage among 531 Alcoholics in California, Quart. J. Stud. Alcohol 18:417 (1957).

134. Todd, Frances: *Teaching About Alcohol,* McGraw-Hill, New York, 1964.

135. Ullman, Albert D.: Attitudes and Drinking Customs, in *Mental Health Aspects of Alcohol Education,* U.S. Public Health Service, 1958.

136. U.S. Federal Bureau of Investigation: *Uniform Crime Reports for the United States—1965,* U.S. Department of Justice, Washington, D.C., 1966.

137. U.S. National Center for Health Statistics: *Vital Statistics of the United States, 1964,* U.S. Public Health Service, Washington, D.C., 1966.

138. Victor, Maurice: Alcohol and Nutritional Diseases of the Nervous System, J.A.M.A. 167:65 (1958).

139. Weeks, J. R.: Experimental Narcotic Addiction, Scient. Am. 210:46 (1964).

140. Westerfeld, Wilfred W., and Schulman, Martin P.: Metabolism and Caloric Value of Alcohol, J.A.M.A. 170:197 (1959).

141. Willard, William R., and Straus, Robert: Community Approaches to the Problems of Alcoholism, New York J. Med. 58:2256 (1958).

142. Williams, Roger J.: *Alcoholism: The Nutritional Approach,* University of Texas Press, Austin, 1959.

(*) Originally published by Yale Center of Alcohol Studies, New Haven, Conn.

SUGGESTED SUPPLEMENTARY READING

Block, Marvin A.: *Alcoholism. Its Facets and Phases,* John Day, New York, 1965.

Chafetz, Morris E.: *Liquor, Servant of Man,* Little, Brown, Boston, 1965.

Jackson, Douglas: *Stumbling Block,* Board of Missions of the Methodist Church, New York, 1960.

Jellinek, E. M.: *The Disease Concept of Alcoholism,* Hillhouse Press, Highland Park, N.J., 1960.

Leake, Chauncey D., and Silverman, Milton: *Alcoholic Beverages in Clinical Medicine,* Year Book Medical Publishers, Chicago, 1966.

Lolli, Giorgio: *Social Drinking,* World, Cleveland, 1960.

Lolli, Giorgio; Serianni, Emidio; Golder, Grace M.; and Luzzatto-Fegiz, Pierpaolo: *Alcohol in Italian Culture,* Rutgers Center of Alcohol Studies, New Brunswick, N.J., 1958.

Lucia, Salvatore P. (ed.): *Alcohol and Civilization,* McGraw-Hill, New York, 1963.

Maddox, George L., and McCall, Bevode C.: *Drinking among Teen-Agers,* Rutgers Center of Alcohol Studies, New Brunswick, N.J., 1964.

Mann, Marty: *New Primer on Alcoholism,* Rinehart, New York, 1958.

McCarthy, Raymond G. (ed.): *Drinking and Intoxication,* Rutgers Center of Alcohol Studies, New Brunswick, N.J., 1959.

McCarthy, Raymond G. (ed.): *Alcohol Education for Classroom and Community,* McGraw-Hill, New York, 1964.

Pittman, David J., and Snyder, Charles R. (eds.): *Society, Culture, and Drinking Patterns,* Wiley, New York, 1962.

Roueché, Berton: *The Neutral Spirit: A Portrait of Alcohol,* Little, Brown, Boston, 1960.

Sadoun, Roland; Lolli, Giorgio; and Silverman, Milton: *Drinking in French Culture,* Rutgers Center of Alcohol Studies, New Brunswick, 1965.

Snyder, Charles R.: *Alcohol and the Jews,* Rutgers Center of Alcohol Studies, New Brunswick, N.J., 1958.

Straus, Robert, and Bacon, Selden D.: *Drinking in College,* Yale University Press, New Haven, 1953.

U. S. GOVERNMENT PRINTING OFFICE : 1968 O - 285-337